Securing Wider Benefits from Creative Activity through Collaboration

Final Report

For Scottish Funding Council

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We would like to thank all those who participated in the research of the case studies!

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1. Introduction

This report has been prepared for the Scottish Funding Council (SFC), working in partnership with Creative Scotland, and key stakeholders Interface, Scottish Enterprise (SE) and Highlands and Islands Enterprise (HIE).

The study was led by EKOS, and benefitted from external peer review input provided by Sylvia Amann from InfoRelais, who commented on early drafts and suggested areas for further exploration or improvement. The study was conducted between February and August 2017.

1.1 Study Aims and Objectives

Complementing the research of two other work packages¹, the creative collaboration study had two aims:

- review models and methods that have emerged internationally to support the innovation impact of creative graduates; and
- identify and review those models that seek to draw on the strengths of academics and graduates from the creative disciplines to provide explicitly instrumental benefits to challenges and opportunities in other sectors.

Through the selection of suitable case studies, the review focused on identifying the institutional frameworks and operational methods used and outcomes achieved. In addition, the research sought to assess if there are any distinct models which could be applied in a Scottish context and be of benefit to the Creative Industry (CI) sector in Scotland.

1.2 Study Method

The research involved the initial screening of 26 examples and further in-depth research of 11 cases that were of particular interest to the Client.

The review and analysis of each example addressed the following aspects:

¹ Work Package 1 - review of activity between colleges, universities and industry to support innovation in the creative industries; and Work Package 2: review of post-study destinations of Scotland’s creative graduates.
Wider Benefits through Creative Collaboration – Case Studies Summaries Paper

- the range of activities implemented;
- the type of institutional framework that is used (partnerships, roles and responsibilities of stakeholders);
- the operational methods applied, including funding sources and implementation approaches;
- the range of outcomes and the extent to which targets are being achieved and monitored; and
- the transferability of the models to the Scottish context.

The primary research material was designed to tap into the experience of existing initiatives worldwide and to explore how creative resources can effectively increase the innovative capacity across the economy and society as a whole.

Principal Study Methods

The study had two distinct phases, whereby the first represented a scan of potentially interesting initiatives (26 were identified) out of which 11 were selected with the Client for the second phase which included further research and telephone interviews with the selected examples.

The preparatory phase of the research designed the principal research questions and a topic guide for the initial identification of suitable examples. The development of the topic guide incorporated a number of key search terms for the internet-based scan. We were particularly looking to find multi-disciplinary, cross-sector projects that originated from or worked closely with CI professionals, academics or students. At the same time, our interest focused on how the cross-sector and multi-disciplinary approach was accomplished, how it originated, who was involved and what scale of funding was required. We also explored if any outputs and impacts (particularly economic impacts) were reported, or if and how the initiatives monitored their achievements.

KEY SEARCH TERMS (in no particular order)

Creative Industries, hubs, cross-sector, multi-disciplinary, integrated, collaboration, innovation, universities, business, public sector, partnerships, incubators, clusters,
It should be noted that during the internet scan, the search terms were applied flexibly to allow for a ‘snow ball effect’ signposting us to further interesting projects. This freedom was required to identify the best fit with the objectives of the study and to find the best fit.

The internet search resulted in the identification of 26 initiatives that seemed to match the study’s objectives well. The findings were written up and presented in a catalogue format.

In a joint meeting with the Client the findings were reviewed and 11 initiatives selected for further, more in-depth research.

For the second phase of the research, a questionnaire was designed for the semi-structured telephone consultation programme. The questionnaire was designed to draw out further information, such as the specific success factors, challenges in implementation, know-how and learning points of the initiative and its potential transferability to Scotland.

Telephone and skype interviews were organised with the selected initiatives, and where possible, follow up interviews were undertaken with other members of staff, or other recommended initiatives.

The findings of the primary research were written up in a case study format and are presented in Appendix A. The eleven case studies form the basis of the analysis of this report.

1.3 The importance of ‘Open Innovation’

All case studies reviewed in this report are based on the principles of ‘Open Innovation’.
Open Innovation and Social Innovation – a Defining Approach

The operational principle of ‘Open Innovation’ underpins the rationale of undertaking knowledge transfer, whereby ideas and knowledge from outside an organisation / business / industry sector are embraced in conjunction with internal good practice and development ideas, offering novel ways of creating value.

Most of the case studies researched by this study identify ‘Open Innovation’ as a sequence of collaboration and knowledge transfer involving a mix of stakeholder groups and sectors with a commitment towards finding new solutions to existing problems.

At the same time, many case studies reported their interest in ‘Social Innovation’ which is also based on collaborative knowledge-transfer processes between different sectors and stakeholders, however with a focus on addressing social needs often relating to community-based developments, health and wellbeing, and civic society. Equally, social innovation is based on generating creative ideas through imagination and cross-sector collaborations.

As shown by this research, Open Innovation emphasises the importance of cross-sector and multi-disciplinary approaches between universities/colleges, industry and government, civil society, environment and culture to generate new ideas and create innovation.

The current research has identified relevant examples world-wide and outlined models of successful collaboration within and between industry sectors, higher education (HE), further education (FE), individual businesses, creative graduates, and society.

1.4 Study Considerations

Although all 11 examples consider CI disciplines as crucial contributors to the process of multi-disciplinary innovation, not all initiatives are focussed exclusively on the CI sector (i.e. collaborating exclusively between CI academia and CI businesses). ‘Collaboration’ was more often understood as working across different sectors and disciplines, whereby the CI constituted a vital component, yet, by definition, not the only discipline of the multi-disciplinary approach. Having said this, the review presents many case studies specifically dealing with ‘design’ and ‘media’,
others that represent facilitation units within CI faculties, and others that have a
distinct focus on promoting the role of creativity in technology, science, and urban
design.

In two cases the study team was unable to achieve responses for the primary
research. Despite initial contact being made and a number of follow up/reminders
sent, we were unable to arrange an actual consultation. (National Design Business
Centre/ India; and Open Living Labs/ an EC-network). However, a number of
consultees signposted us to two other initiatives (Demola International and
DesginLab) which have been included in the review.

There are two case studies that are very similar in their approach, whereby the good
example of the New Factory in Tampere, Finland triggered the development of an
international network, Demola International. Demola International is now the
promoter of this particular approach to cross-sector, multi-disciplinary collaboration
worldwide.

The telephone/skype interviews were each between 60-90 minutes long. This time
span was often not long enough to address all questions of the topic guide.
However, across the eleven cases, a comprehensive coverage has been achieved.

The questions about annual budgets were, in many cases, insufficiently addressed.
At times, the interviewees did not have accurate figures at hand, or there was
insufficient time to cover this topic. In other cases, the budget was difficult to
determine as part of the initiative was core-funded by the lead organisation and
further supported by external funding sources. In other examples, it was difficult to
determine clearly the organisational boundaries of the initiative within complex
internal funding and operational structures. This is covered in more detail in the
report.

1.5 Report Structure

This report provides the analysis of the findings across the 11 case studies and
summarises a number of detailed aspects of the findings according to the key areas
of research interest as follows:

- Chapter 2 – presents an overview of the findings across all case studies and
  attempts a grouping of the examples into three operational models. A brief
summary of each case study introduces the reader to the range of initiatives explored;

- **Chapter 3** – provides an overview of the aims, objectives and motivations of stakeholders in participating in multi-disciplinary, collaborative initiatives;

- **Chapter 4** – describes in more detail how projects approach collaboration and presents some of the key stages of implementation;

- **Chapter 5** – summarises the achievements of collaboration as reported by the consultees and reflects on how projects evidence their outputs and impacts;

- **Chapter 6** – outlines the success factors and challenges that have been shared by the case studies and presents some of their key learning points; and

- **Chapter 7** – presents the conclusions of the research in view of the key research questions set in the study brief.

The write up of each case study is presented in **Appendix A**.
2. Overview and Operational Models

2.1 Introduction

This chapter commences with a brief summary of all case studies (with further detail on each provided in Appendix A). The chapter then presents an overview of the financial and governance structures for the case studies, followed by a summary focusing on the key topics relevant to the study (which are then explored in more detail in Chapter 3). The chapter finishes with an attempt to group the eleven initiatives into three operational models.

2.2 Overview of the Selected Case Studies

This section presents summaries of the 11 case studies. More detail for each case study is provided in a separate appendix report of this study.

In the following, the case studies are grouped by their allocation to identified collaborative ‘models’ as discussed in Section 2.6.
Model I - Permanent multi-disciplinary teams

Waag Society

<table>
<thead>
<tr>
<th>Location: Amsterdam, Netherlands</th>
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<tbody>
<tr>
<td>Lead Organisation: Waag Society</td>
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<tr>
<td>Established: 1994</td>
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<tr>
<td>Main Funders: Public sector, research funding, European, private sector</td>
</tr>
<tr>
<td>Type of Collaboration: Academia, public, business/industry, community</td>
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Waag Society— institute for art, science and technology— originated with a particular focus on connecting internet technology to society through digital media. Since its start up 22 years ago, the foundation has developed into a catalyst for events and promoter for cultural and social innovation at local, regional and national level.

Waag Society is a project-driven organisation based on science / art / technology. It explores emerging technologies, and through cross-sector collaboration and regards the input from artists and designers as crucial to technological and scientific projects. Artists and designers are key to stimulate imaginative processes, create unexpected connections. The impacts from their collaborative activities are wide – depending on the project area, including educational, social and economic (through the creation of new products and services).

Key objectives:
- to use technology to change society in a positive way;
- to join up art, science and technology, education, and to work in a multi-disciplinary manner;
- to implement ‘open innovation’ at local, national and European levels; and
- to focus on the user, the public and the community.

Project examples:
There are many examples presented on the Waag website, including:

- Cities 4 People: A People-Oriented Transport and Mobility (POTM), which provides new ways to deliver novel, sustainable, targeted solutions that address the needs of the public.
- the Low Cost Prosthesis programme developed a technology producing a ‘lower knee’ prosthesis in line with open innovation principles whereby end users, designers, researchers and manufacturers all worked together.
- Snoezelen or controlled multisensory stimulation is used for people with mental disabilities, and involves exposing them to a soothing and stimulating environment. Snoezelen rooms are specially designed to deliver stimuli to various senses, using lighting effects, colour, sounds, music, scents, etc. The combination of different materials on a wall may be explored using tactile senses, and the floor may be adjusted to stimulate the sense of balance.
ARS Electronica FutureLab

Location: City of Linz, Austria
Lead Organisation: ARS Electronica
Established: 1996
Main Funders: Mix of local, regional and national government, private sector
Type of Collaboration: private sector, public sector, academia, public

With a key focus on multi-disciplinary collaboration, ARS Electronica FutureLab aims at developing contributions through methods and strategies of applied science. The results of this process lead to new knowledge and experiences of societal relevance in art and science.

The FutureLab was created to support the existing science museum to keep its contents up-to-date and relevant to current developments. FutureLab categorises activity within broad topics including: empowerment, art and science, novel cultural experiences, reframing communication, inventing tomorrow, and encouragement. FutureLab’s staff is comprised of researchers from a range of disciplines including 12 artists in residence, architecture, design, interactive exhibitions, virtual reality and real-time graphics.

Projects are undertaken either in isolation i.e. within FutureLab, or in partnership with the private sector. Activities are not restricted to specific sectors, instead FutureLab operates across multiple sectors such as Sport and Leisure, Car Manufacturing, and many more. In recent years, FutureLab has increased its partnership working with the private sector including companies such as SAP, Daimler, Intel, BASF and Primetals Technologies as well as with education. Key fields of interest include media art, architecture, design, interactive exhibitions, virtual reality and real-time graphics.

Key objectives:
- to conceptualise the intangible;
- for the museum and its content and events to remain ahead of emerging technologies;
- to bring scientific innovation closer to the wider community;
- to deliver and facilitate interdisciplinary R&D projects in partnership with private sector organisations and industry.

Project examples:
- a four year research project with an international German car manufacturing company researching concept cars i.e. driverless cars including unusual showcasing locations. Since this project, other car manufacturers have also approached FutureLab to undertake similar R&D assignments.
- a spin out project ‘Spaxels Ltd’ brought together aviation with computer graphics to create 3D objects from drone technology. Spaxels Ltd has caught the attention of a range of organisations throughout the world, including Japanese telecommunications company that is now engaging with ARS Electronica Japan.
Laboratorio para la Ciudad

**Location:** Mexico City
**Lead Organisation:** Mexico City Government
**Established:** 2013
**Main Funders:** City Government
**Type of Collaboration:** Public sector, citizens, academia

The Laboratorio para la Ciudad (Laboratory for the City) is Mexico City’s new experimental office for civic innovation and urban creativity, the first city government department of its kind in Latin America. The Lab is a space for rethinking, reimagining, and reinventing the way citizens and government can work together towards a more open, more liveable and more imaginative city.

The approach does not only focus on delivering better services or offering new channels for engagement, but seeks to reimagine the role of government and how it can contribute to building better cities.

**Key objectives:**
- to facilitate social and civic development;
- to create new models of development which are better for the planet;
- to be a Think Tank for the local government in the area of citizen participation.

The Laboratorio works across five different topics around which teams are built (architecture, playful city, creative city, mobility, participatory budgeting).

The underlying rationale of the Laboratorio is focused on what democracy means, and how governance structure can support a better and fairer democratic system? There is a strong focus on the ‘collective good’ which is key to all the initiatives undertaken. There is a further clear focus on practical research utilising the urban and creative skills sets.

**Project Examples:** The urban creativity projects allow people to see their city (and their place in the city) with new eyes. The aim is to generate ideas in public, highlighting great projects and talented people, and exploring other experiences from around the world. Creativity is a key factor to spark conversations and collaborations.

Other projects focus on improving access to city data, hackathons, projects improving safety, sculptures, an international residence programme, urban markets, new ways of partnering with the private sector, and festivals.

Collaboration is key for the Laboratorio. There is a strong belief that only through more ingenious collaborations will cities have access to the newest ideas. The Laboratorio is constantly seeking new proposals and provocations around the problems and opportunities of the city, both within government and through civil society.
Model II – Cross-sector brokers and accommodators


**Location:** Tampere, Finland  
**Lead Organisation:** Consortium of public, private and academic organisations  
**Established:** 2008  
**Main Funders:** Consortium of public, academic, private sector funders  
**Type of Collaboration:** Academia, private sector

The New Factory is an innovation centre and business incubator that connects entrepreneurs, a number of local universities, students, researchers, mentors, investors and experts from various fields to foster co-creation.

The focus is on business sector needs and bringing multi-disciplinary student teams together to find solutions for existing problems. The New Factory deals with 67-70 projects each year. Within each project, the multidisciplinary student team represents a mix of academic fields, such as technology, business, art and creative industries – a good mix is very important.

The process of cross-sector working is facilitated and constitutes a particular focus of the approach. If the student team develops a feasible idea, businesses can purchase the licence for the solution, thereby creating an income stream for the New Factory. 60% of the results have been purchased by companies.

**Key objectives:**
- to support companies finding innovative solutions;  
- to turn good ideas into innovative products, services and business that change the world for the better;  
- to support innovation through multi-disciplinary approaches;  
- to create entrepreneurial thinking;  
- to facilitate collaborative, cross-sector skills and abilities;  
**Key values are:** creativity, curiosity, courage, concreteness, community.

**Project Examples:**
- Smart Glove Controller – the project team had to develop a prototype that allows crane users to use a smart glove as a crane controller, changing radically the way in which cranes are operated.

- The Dream Towncenter – the project partner was looking for out-of-the-box and even disruptive ideas from the project team to revitalise the centre and its surroundings;

- Go with the Flow – is a prototype for software and user interface that can automatically separate professional, algorithmic system design from graphical as a low-fidelity design tool.
The DesignLab is a creative and cross-disciplinary facility at the University of Twente, connecting science and society through design.

The DesignLab offers a variety of bespoke designed spaces fostering interaction and collaboration between staff and students from all academic fields working together with companies and governments.

The aim is to implement and develop scientific and technological insights that can be used in finding and shaping creative, innovative and meaningful solutions for complex societal challenges. There is a focus on connecting engineering, natural science, social science and the humanities and by using their creativity to help solve some of societies’ problems.

Talents from engineering, natural science, social science and the humanities join forces to use their creativity.

Key objectives:
- to build on the strategy and strength of the university of Twente regarding its key theme: High Tech Human Touch;
- to match-make, reach out and connect researchers with partners;
- to provide a safe space for research, labs, meeting, exhibition space; and
- to teach people how to collaborate.

Activities:
For those willing to work in a multi-disciplinary and creative manner, the facility offers a range of spaces and a bespoke environment to meet, interact, generate ideas, design, build and test prototypes.

‘Translating science to society’ is a core theme of the DesignLab and there are a number of multi-disciplinary study and degree programmes focussing on connecting science and technology to societal challenges through design.

The DesignLab hosts courses like: 'Integrative Design of Biomedical Products', 'Design of Robotic Systems', 'Philosophy of Technology', 'Design and Emotion'.

To maximise interaction between multiple disciplines at the University and to promote creativity, DesignLab has teamed up with the faculty of Behavioural, Management and Social Sciences and has launched a programme called Tech4People. The programme is to strengthen the link between social and technical sciences.
Media Factory

http://mediafactory.aalto.fi/

Location: Helsinki, Finland
Lead Organisation: Aalto University
Established: 2012
Main Funders: Aalto University is the primary funder
Type of Collaboration: Academia and private sector (linked by media sector)

The Aalto Media Factory focuses on developing multidisciplinary media-related research and education, welcoming people from the local area, and reaching out to commercial industry partners and non-profit organisations.

Media Factory brokers collaborations and resources joint ventures, such as research projects, pilot courses and event productions by providing funding, coaching, tools and spaces.

There are a number of ‘factories’ connected to Aalto University, including the Media, Design and Health Factory. They all provide platforms for collaboration and development outside the usual scope of academic departments and research units joining up with a number of universities and external private and public organisations.

Key objectives:
- to provide access for individuals, businesses, students and academics to media equipment (for free/cheap) and broker contacts to foster innovation;
- to design inter-disciplinary study programmes; and
- to offer Open Design student workshops.

Type of Projects/Services:

- Media Factory develops ‘minor’ study programmes and course modules, bringing together schools from across Aalto University.
- Content Business and Technologies - developed and delivered in collaboration within three schools: Art, Business, and Science.
- In a new partnership with Nokia. Media Factory offers: AV production services, AV edits.
- Researchers Breakfasts
- Media Coaching sessions for academics
- Equipment hire
- Open Days
- Introductory sessions for artists to electronics
- Student projects using digital fabrication techniques, laser-cutting
- Session bookings at workstations, AV edit rooms, auditorium
Demola International Network

Location: World-wide network
Lead Organisation: Demola International
Established: 2008
Main Funders: Network members
Type of Collaboration: Transnational academia, private sector and public sector

Demola is an international organisation that facilitates interdisciplinary co-creation projects between university students and companies, either locally or internationally. The operational co-creation concept is geared to solve real challenges and seeks to produce new concepts or prototypes.

Demola is a process that is formatted and facilitated. If the partner company finds the outcome useful, the company can license or purchase the outcome, and take it for further development.

Key objectives:
- to enable and facilitate the process of learning how to think creatively;
- to create environments and conditions where businesses and students can utilise their complementary skills, thoughts and perspectives;
- for companies to utilise students/academics more effectively;
- to re-learn how to collaborate in a multi-disciplinary way and to grasp the potential of working with different skills and perspectives;
- to support SMEs in getting the best out of collaborating with universities and to learn what universities can do for them;
- to tap into the positive mind-sets of young people; and
- for companies to utilise the potential of their staff more fully.

The Demola method:
The Demola process works across all members of the network in the following way:
- A consortium of local institutions, universities, local authorities and/or private sponsors becomes a member and recruits a Demola facilitator.
- A campaign/call for ideas is launched to attract companies to participate.
- A campaign is launched in the universities to attract students to the ideas.
- The universities form multi-disciplinary study teams which work together over a period of 3-4 months. Students choose their own topics.
- The facilitator helps to overcome differences in ‘language’, approaches and creates the conditions and skills for collaboration.
- Continuous contact with the companies is important; approximately five hours per week dedicated to working with the companies.
- Building trust between the companies and the student teams is important.

The Demola facilitator addresses the above challenges and aspects of learning. The network has a relevant ‘tool box’ at his/her disposal. The clear structural approach of Demola offers a frame within which the uncertainty can be contained.
**REACT**

**Location:** Bristol, UK  
**Lead Organisation:** Watershed Pervasive Media Studio  
**Established:** 2012-2016  
**Main Funders:** External research funding sources (AHRC Creative Economy Hub)  
**Type of Collaboration:** Academia, public, private sector

Watershed Pervasive Media Studio is an independent creative technologies collaboration between Watershed (a cultural cinema and digital creativity centre), UWE Bristol and the University of Bristol. It is located in a refurbished industrial building and hosts an open plan working space for over 130 artists and businesses that are interested in collaborative, inter-disciplinary co-production to create novel design through dialogue and partnership.

REACT (Research and Enterprise in Arts and Creative Technology) was a four year collaborative project between UWE Bristol, Watershed, and the Universities of Bath, Bristol, Cardiff and Exeter. It was dedicated to getting academia and businesses working together, connecting researchers from the arts and humanities with creative businesses to make new prototype products and services. Public engagement played an important role in most areas of collaboration.

REACT was one of four ‘Knowledge Exchange Hubs for the Creative Economy’, and offered space for a diverse community and talent pool of artists, creative companies, technologists and academics to engage in collaborative initiatives in the area of design and creative technology.

**Key objectives:**
- Collaborative projects aiming at developing a prototype or experience which was tested with a public audience (worked across academic disciplines, but not art disciplines as such)  
- To build on the Watershed experience incorporating the critical perspectives of academics and widen the initiative to other sectors, particularly businesses and the public sector  
- There was an ambition to contribute to societal change and change mind-sets of people  
- Method was based on open sourcing and dissemination of findings on the website – ‘sharing is open’.

**Type of projects**

In consultation with creative economy advisors, Watershed chose five themes for the REACT project: Heritage; Books and Print; Future Documentary; Internet Connected Objects; and Play. The rationale for their selection was that these industry sectors were in most need of research and development support by using disruptive approaches for technological innovation. For each theme a call was organised and interested businesses and researchers participated in a one-day session to meet and generate initial ideas.
Model III - Facilitators of cross-departmental collaboration

Creative Intelligence and Innovation Unit (CIIU)


Location: Sydney, Australia
Lead Organisation: University of Technology, Sydney (UTS)
Established: 2012
Main Funders: Central Government
Type of Collaboration: Academia, students, and industry partners

CIIU is an on-campus unit facilitating cross-disciplinary projects. By focusing in teams on high-level conceptual thinking and problem-solving practices, students learn to work across and between disciplines, gaining skills and mindsets. The aim is that through this process students will become lifelong innovators, entrepreneurs, creative practitioners and change-makers.

CIIU offers opportunities for business, industry and communities to collaborate and form partnerships to contribute to communities locally and globally.

Key objectives:
- to foster creativity as the new frontier for problem solving regarding global matters (food supply, energy use);
- to harness and integrate existing strengths in creativity, technology, and innovation (creative innovation and creative intelligence); and
- to pilot and prototype new models of teaching, learning and industry engagement.

Type of Projects:
- The STEAMpunk Girls pilot was developed through a co-design process with twenty four high school girls and five teachers. It is an educational programme which advocates for young women, aged 12-16, to engage with STEAM (science, technology, engineering, arts and maths), help them develop entrepreneurial mind-sets, and create their own counter-culture.

- The Future of Storytelling Symposium was an event in 2015 consisting of eight sessions over a period of sixteen weeks. It involved around 50 people and leaders in storytelling, technology and futurism sharing cutting edge technologies, and exploring how leading storytellers are pushing the boundaries of emerging technologies.

- In order to drive the Innovation and Creative Intelligence Strategy, CIIU delivers programs and projects in areas that include: emerging technology; new ways of thinking; entrepreneurial mind-sets; start-ups; and creative intelligence.
MindLab

Location: Copenhagen, Denmark
Lead Organisation: Danish Government
Established: 2002
Main Funders: Central Government
Type of Collaboration: Public Sector, Community, Business

MindLab is a cross-governmental innovation unit which involves citizens and businesses in creating new solutions for society. A physical space provides a neutral zone for inspiring creativity, innovation and collaboration covering areas such as entrepreneurship, digital self-service, education and employment. MindLab is instrumental in helping key decision-makers and employees view their efforts from the outside-in, to see them from a citizen’s perspective, using this approach as a platform for co-creating better ideas.

Key objectives:
- to change government culture;
- to react to the growing interest in better service design as a key driver of service innovation, social innovation and user-centred innovation;
- to help cut across disciplinary and departmental silos;
- to engage more directly with service users and their needs;
- to engage in co-design with the users/members of the public;
- to run innovation labs designed to foster collaboration; and
- to produce better solutions, improve communication and implementation.

Project Examples:
- Rapid prototyping and testing is used to co-create solutions with citizens, businesses and government agencies. To understand user experiences, MindLab draws on a range of techniques and methods, interviewing users, applying various workshop formats to structure group discussion, asking users to narrate their experience by taking photographs or keeping a diary. These insights are then collated to be communicated back to the ministries, and in some instances are used to prototype potential solutions.

- MindLab office hosts periodic workshops and seminars, and is designed as a neutral space for cross governmental collaboration and innovation. To change government culture, MindLab runs bespoke training courses with civil servants on the use of design methods, focusing the training around a particular challenge a ministry is facing.

- For example, in one project, MindLab worked with the National Board of Injuries to try and improve the re-entry of young victims of industrial injury back into the workforce.

- Another MindLab project involved getting businesses involved in the development of proposed reforms to the food industry.
### OpenLab

**Location:** California, USA  
**Lead Organisation:** University of California, Santa Cruz  
**Established:** 2011  
**Main Funders:** Research Funding  
**Type of Collaboration:** cross-departmental academia, general public and industry

The OpenLab with its Idea Hub is a campus-wide initiative for students, created to spread social and creative entrepreneurship at UCSC. OpenLab is led by the on-campus Centre for Innovation and Entrepreneurial Development. The OpenLab supports a network of incubation facilities, fellowships, seminars, workshops, and mentorships that provide students space to think critically about the challenges facing society.

Participation provides graduate and undergraduate students with the skills and capacity to conceptualise and execute their ideas. Workspaces provide access to hardware and software for development and innovation in design, manufacturing, communications, and data visualisation.

OpenLab was created due to demand expressed by students seeking collaboration across faculties.

**Key objectives:**
- to foster innovation through cross-sector inputs, and to share insight and knowledge across disciplines for the benefit of all;  
- to enable students to work in a multi-disciplinary manner;  
- to offer a physical space and conducive environment for collaboration;  
- to connect people and facilitate match-making; and  
- to design products, prototypes, visualise ideas, digital application installations.

**Project Examples:**
- **Astrophysics Visualization Lab:** visualizations of physics models to help researchers and the general public develop a sense of what happens when certain interactions between stars and super massive black holes.
- **Oceanic Scales** is a place to learn and to be inspired about phytoplankton, the first link in the oceanic food chain. This project explores the tipping point between humanities desires and the oceans’ needs.
- **The THRIVEfamilyLAB** is an initiative for the creation of iPhone/iPad APPS for parents including inter-disciplinary training for professionals, Infant Observation Courses and pregnancy accompaniment groups.
- **The Innovation and DesignLab** is devoted to creating and publishing new knowledge in the health and wellness industries through a holistic approach to innovation and design research that generates products, tools, services, and solutions to improve health outcomes.
2.3 Summary of Finance Characteristics

Obtaining financial information was difficult in many cases, partly because some interviewees did not know the detail, or the initiative was an integral part of a wider organisation and not clearly separated in budgets. This lack of transparency was confirmed by further desk-based research, showing that in many cases Annual Reports did not separate the collaborative initiative clearly in financial terms or financial reports used more general budget headings.

However, what Table 2.1 (over) shows is that there are considerable variations between the case studies, particularly if one takes the staff number into account. For example, Case Study 1 Waag Society has 60 staff and a budget of (€3.7m) whereas Case Study 2 employs 31 at a budget of €2.8m. The difference might be due to FTE (only head counts were provided) and/or different budgets for other expenditure items. Therefore, it is difficult to make comment on the detailed financial situation of each case study.

Further information was obtained through interviews regarding funding. The majority of case studies relied heavily on public sector funding support either as core funding or by competitive tendering through research funding councils, local regional and national sources and the European Commission programmes (where relevant).

Some examples also benefited from corporate industry support and donations. This was particularly the case for Case Study 4 New Factory where a large corporate (Nokia) provided the essential start-up capital and industry support for the initiative.

In terms of self-financing and generating income from the private sector, many examples in our study had only limited scope. However, some of the most mature initiatives have increased private sector income over many years to some extent (for example Case Study 1-Waag Society generates around 30% of its income from commercial contracts; and Case Study 2- ARS Electronica increased its private sector income by 35% in 2015 – from a 90/10 split between public/private income generation during the early years of ARS Electronica, it has been reported that this is now reversed for some parts of the organisation). Also Case Study 4- New Factory and Case Study 7 - Demola International aim to sell the licences of their research outputs to participating businesses (this is achieved in around 60% of all collaborative cases).
It is interesting to note that the examples with some success in generating income commercially from the private sector are those that are set up either as independent or at-arms-lengths organisations of public bodies.
<table>
<thead>
<tr>
<th>Model</th>
<th>Case Study</th>
<th>Staff</th>
<th>Per annum</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model I</td>
<td>1 Waag Society (2016)</td>
<td>60</td>
<td>€3.7m</td>
<td>The budget is further broken down into Management (€803,596 of which 46% staff and 54% supplies) and Projects (€2.9m of which 67% staff and 33% supplies).</td>
</tr>
<tr>
<td>Model II</td>
<td>2 ARS Electronica (2015)</td>
<td>31 (Future Lab only)</td>
<td>€14.6m</td>
<td>The various branches of ARS support each other, Future Lab (€2.8m) and Solutions (€3.6m) generate more commercial income, and a 10% profit in these areas co-funds more community-focused activities. The Museum and Festival activities generate €511,000 income from entrance fees.</td>
</tr>
<tr>
<td></td>
<td>3 Laboratorio para la Ciudad</td>
<td>20</td>
<td>260,400 USD</td>
<td>This is the annual average budget for projects.</td>
</tr>
<tr>
<td>Model II</td>
<td>4 New Factory</td>
<td>13</td>
<td>€200,000</td>
<td>New Factory Ltd is part of the Hermia Group Ltd that has an annual turnover of €7m (70 projects, 50 experts, and 100s of member organisations)</td>
</tr>
<tr>
<td></td>
<td>5 DesignLab (2017)</td>
<td>6 staff and 20 students</td>
<td>€1.4</td>
<td>Source: [<a href="https://www.utwente.nl/.../Jaarverslag2016-8c4680010253cc1800ac4a0803fe3c0b004b...page">https://www.utwente.nl/.../Jaarverslag2016-8c4680010253cc1800ac4a0803fe3c0b004b...page</a> 77](<a href="https://www.utwente.nl/.../Jaarverslag2016-8c4680010253cc1800ac4a0803fe3c0b004b...page">https://www.utwente.nl/.../Jaarverslag2016-8c4680010253cc1800ac4a0803fe3c0b004b...page</a> 77)</td>
</tr>
<tr>
<td></td>
<td>6 Media Factory</td>
<td>15</td>
<td>€1m to €5m</td>
<td>All finances are integrated in Annual Reports of the university without a separate line for the Media Factory could be identified (Media Factory was part of the School of Art).</td>
</tr>
<tr>
<td>Model</td>
<td>Case Study</td>
<td>Size/Staff</td>
<td>Budget/Instruments</td>
<td>Notes</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
<td>------------</td>
<td>-------------------</td>
<td>-------</td>
</tr>
<tr>
<td>7 Demola International</td>
<td>6 (+ advisors)</td>
<td>Could not find any information on financial aspects. But as this is a network operation, it may be less relevant. In terms of running a Demola initiative, Case Study 4 provides information on the relevant scale.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 REACT</td>
<td>6</td>
<td>€4m</td>
<td>Representing the funding award made to the project by the AHRC over four years (2012-2016).</td>
<td></td>
</tr>
<tr>
<td>9 ICI, Sydney</td>
<td>25</td>
<td>$1m</td>
<td>Funded as part of the University of Technology in Sydney; Annual Report did not identify budgets by Faculty.</td>
<td></td>
</tr>
<tr>
<td>10 MindLab</td>
<td>21</td>
<td>Around 10 million Danish Kroner (£1.2m)</td>
<td>MindLab is an internal government unit.</td>
<td></td>
</tr>
<tr>
<td>11 OpenLab (2014/15)</td>
<td>27</td>
<td>$751,288</td>
<td>The amount represents the budget heading in ‘Interdisciplinary Instruction’ with a total number of staff of 13FTE in 2014/15 (only listed in the Science Faculty not in the Art Faculty). The staff number of 27 relates to the findings of the interview in 2017.</td>
<td></td>
</tr>
</tbody>
</table>
2.4 Summary of Governance Characteristics

The eleven case studies separate into three distinct groups in terms of their governance although – by their cross-sector, collaborative nature - there is overlap in terms of the type of partner organisations involved. Table 2.2 (over) shows that there are three principal governance types:

- integrated into university management structures;
- independent bodies or membership organisations; and
- integrated into local or national government structures.

2.4.1 Integrated into university structures

Those initiatives that are integrated within university structures are considerably diverse in terms of their collaborative models (see Section 2.6), and their set up within their university. For example, Case Study 9 ICI is a faculty in its own right; whereas Case Study 11 OpenLab is a joint unit between two faculties but located in the Arts Faculty. The financial structure was different in both cases, whereby budgets were much easier to identify in Annual Reports for ICI with faculty status.

A further two of the cases are distinct initiatives either operating within the Arts Faculty (Case Study 6 Media Factory) or on campus across all faculties (Case Study 5 DesignLab).

In most cases, case studies reported that they have developed their own educational courses, models, and degrees.

During interviews, there was some consideration given at times to the fact that initiatives based within university governance structures, might potentially be likely to function as ‘brokers only’ between departments, between academia and business/public/community sector. Interviewees emphasised that for the sake of sustainability it was advisable to have a larger remit and a degree of independence to create courses and projects for increased integrity and dynamism.
2.4.2 Independent bodies or partnerships

A number of case studies are of a more independent or arm’s-length nature in relation to their key funding partners. For example, Waag Society (Case Study 1) was created by two entrepreneurs and continued as an independent organisation. In the case of ARS Electronica (Case Study 2), Futurelab was set up as a cross-disciplinary arm of a Technology Museum and together with other, similar initiatives ARS Electronica developed into a long-standing independent organisation.

Similarly to ARS Electronica, but not associated with a Technology Museum, Case Study 4 New Factory represents an off-campus multi-sector partnership initiative. In this case, it is interesting to note, that there is a debate about bringing the New Factory on-campus, but as there are three partner universities involved, this is a controversial proposal. In addition, consultees considered the off-campus, independent location of the New Factory to be of advantage in fulfilling a bridging role between academia and the business sector.

Closely associated with the New Factory is Case Study 7 Demola International, a membership organisation promoting and facilitating the New Factory model.

Case Study 8 REACT was a partnership with the University of WE Bristol, but located off campus on the partner’s premises.

In all cases of independent nature, there was a clear focus on business needs (with Waag Society having a much wider societal remit, but including social/enterprise development).

2.4.3 Integrated into government

Two of the case studies are initiatives that have been integrated into government structures, one at local government (Case Study 3 Laboratorio) and one at central government level (Case Study 10 MindLab). Whilst both emphasise their role in bringing about cross-departmental collaboration and change in approach and innovative thought within government, their key purposes are to work on civic issues and on policy innovation.

Laboratorio is the ‘younger’ initiative and was influenced by the longer-established MindLab.
Laboratorio emphasises particularly the role of creativity in the design of civic structures and services. Their engagement with multi-disciplinary teams and large-scale community engagement features a multitude of projects in urban space development as well as bringing about innovative thinking addressing long-standing urban and societal problems.
### Table 2.2: Case Studies Summary Table: Governance Information

<table>
<thead>
<tr>
<th>Collaboration Model</th>
<th>Case Study</th>
<th>No of Staff</th>
<th>Type of Organisation</th>
<th>Governance</th>
<th>Additional Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>1 Waag Society (2016)</td>
<td>60</td>
<td>Independent organisation</td>
<td></td>
<td>Waag Society is an interdisciplinary non-profit media lab researching and developing new technology, art and culture.</td>
</tr>
<tr>
<td></td>
<td>2 ARS Electronica (2015)</td>
<td>31</td>
<td>Public sector Collaborative at arms lengths company</td>
<td>ARS Electronica Linz GmbH is a limited company The Futurelab, housed at the ARS Electronica Center, is a centre of expertise for multidisciplinary research and development of new cyberarts technologies. In addition to its permanent staff, it offers residencies to established and emerging artists and researchers.</td>
<td>Funding is provided by the City of Linz, the Province of Upper Austria and the Republic of Austria, in addition to private partners The various branches of ARS Electronica support each other, Future Lab (€2.8m) and Solutions (€3.6m) generate more commercial income, and a 10% profit in these areas co-</td>
</tr>
<tr>
<td>Collaboration Model II</td>
<td>3 Laboratorio</td>
<td>20</td>
<td>Integrated within the City Council</td>
<td>The Futurelab has produced infrastructure and content for the Center and Festival. More recently it has engaged in joint ventures with universities and the private sector.</td>
<td>funds more community–focused activities. The Museum and Festival activities generate €511,000 income from entrance fees.</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------</td>
<td>----</td>
<td>-----------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>4 New Factory</td>
<td>13</td>
<td>Partnership organisation</td>
<td>New Factory Ltd is a sub-company of Hermia Limited (Finland) Owners: Tampere University of Technology and its support foundation, the City of Tampere, Tampere Technological Society, and the Technical Research Centre of Finland</td>
<td></td>
</tr>
</tbody>
</table>
|                         | 5 DesignLab   | 6 staff and 20 students | Integrated into the University of Twente | A Board of six University staff with scientific/academic and other backgrounds manages the DesignLab consisting of:  
• Managing Director  
• Director,  
• 2 Co-Directors  
• Project Manager  
• Postdoc Researcher, working on the particular research method which underlies all DesignLab activities (Science 2 Design 4 Society) | An Advisory Board looks over, advises and supports the DesignLab Management Team. |
<p>|                         | 6 Media Factory | 15 | Integrated in Aalto University | Media Factory was one of Aalto University's four factories, located at the School of Arts, Design and Architecture. It provided media related services and support to all Aalto stakeholders and the public during its 2009-2016 operations. Now set up as Aalto Studios. |</p>
<table>
<thead>
<tr>
<th>Collaboration Model III</th>
<th>7 Demola International</th>
<th>6 (+ advisors)</th>
<th>Membership network</th>
<th>It is part of the Hermia Group Ltd. in Finland.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8 REACT</td>
<td>6</td>
<td>Time limited Project</td>
<td>REACT was a project run in collaboration between the Watershed Pervasive Media Studio and the University of West of England Bristol.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>9 ICI</th>
<th>25</th>
<th>Integrated in University</th>
<th>This is a Faculty of Transdisciplinary Innovation responsible for programs across a number of key disciplines, offering courses in conjunction with other faculties.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Deans Unit (5 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- UTS Animal Logic Academy (2 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Master of Animation and Visualisation (5 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Bachelor of Creative Intelligence and Innovation (4 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Graduate Certificate in Transdisciplinary Learning in Higher Education (1 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- IML (2 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Scholarly Teaching Fellows (3 staff)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Industry Partnerships (1 staff)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>10 MindLab</th>
<th>21</th>
<th>Integrated in Central Government</th>
<th>MindLab is a cross-departmental innovation unit and owned by three ministries and one municipality:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- the Ministry of Industry, Business and Financial Affairs,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- the Ministry of Employment,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- the Ministry of Education and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Odense Municipality.</td>
</tr>
</tbody>
</table>

The group of owners cover broad policy areas that affect the daily lives of virtually all Danes. Entrepreneurship, digital self-service, education and employment are some of the areas they address.
MindLab’s strategic direction is set by the Board, which meets three to four times a year. It is also the Board that gives final approval to MindLab’s portfolio of projects. MindLab further forms a collaboration with the Ministry for Economic Affairs and the Interior.

| 11 OpenLab | 27 | Integrated into University | This is a joint unit between two Faculties (Art and Astrophysics). |
2.5 Additional Summary Findings

The 11 case studies differ in a number of ways, including their:

- maturity - dates of establishment range from 1994 to 2014;
- primary focus – such as the improvement of the public good / society, business development, graduate education, or public engagement; and
- operational implementation – ranging from time-limited project teams to permanent research units.

Most initiatives were set up for the long-term, to help bring about changes in attitude and the innovative capacity of participants and stakeholders. This was often supported by organisational strategy or policy seeking to become more innovative and stimulate innovative behaviour and capacities (universities) or seeking to address society's problems and improve public sector services through innovative solutions (national and local government). As such, to have strategic and influential leadership support was key across all case studies researched.

A human-centred design, service-user perspective and a creative, multi-disciplinary approach were at the heart of all initiatives. Fundamentally, there was a belief that some of the biggest issues in society, business, and government can only be overcome by generating better ideas and more innovative solutions. The key assumption was that better innovation is achieved through a cross-sector, multi-disciplinary approach working with a group of individuals from a range of perspectives and experiences across disciplines and sectors (a systematic stakeholder approach).

All initiatives relied critically on the commitment and positive attitude of the individuals involved, often relying on champions to promote the concept of the approach through awareness raising, and to provide strategic influence helping to access funding at the outset and throughout.

Consultees often stated that the success of the multi-disciplinary approach depended on working with people who were already positively inclined towards it at the outset and who had an interest and enthusiasm for the process and an openness towards the collaborative approach.
The research findings clearly point out that the multi-disciplinary approach has to be learned and cannot be assumed as simply evolving through networking or goodwill alone. Therefore, a number of initiatives have developed distinct training modules and/or relied on many years of experience in facilitating this learning process in a structured and managed way. Some projects offered trained facilitators to support this process.

Some of the examples that were based within the confines of a university had a particular interest in offering multi-disciplinary courses and modules as part of their curriculum. These were mainly driven by a demand from students to gain access and acquire relevant capabilities and know-how across disciplines. The ultimate aim here was to serve society, including industry, by enhancing the innovation skills and attitudes of graduates for future impact. Other initiatives supported this as well and sought to engage with educational institutions (secondary/primary schools) to develop school modules nurturing the ‘innovative’ mind-set from an early stage.

The creative industries sector was considered a vital partner by all of the collaborative initiatives and graphic design, media, and architecture were often well-represented disciplines. Many of the case studies emphasised the relevance of re-connecting Art with Science to build on the same critical approaches such as questioning status quo, provoking thought and testing difference that is common to both faculties. Often the larger, more established initiatives incorporated a wide range of art subjects, dance and music performance, and visualisation to connect effectively with the wider population for increased public engagement and exchange.

Although economic impact could be shown (particularly in those initiatives with a business focus), the eleven initiatives monitored their achievements primarily through a range of activity and output performance indicators (Number of IP licences bought, social enterprises/spin outs facilitated). However, measuring the impact of the multi-disciplinary approach was usually perceived as far too difficult to contemplate. According to the interviewees, funders were in most cases content with the reporting of performance indicators such as: increased interest in cross-sector initiatives, attendance numbers at events and workshops, number of participants, attendance numbers at events and workshops, number of participants,

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2 From STEM to STEAM (A=Art) was a catchy phrase used by an educational programme which supports young women to develop entrepreneurial mind-sets offered by the Innovation and Creative Intelligence Unit at the University of Technology, Sydney (Case Study 9).
number of downloads of publications etc. In only two cases (Case Study 3-
Laboratorio and Case Study 8-REACT), more detailed evaluation studies focusing on
impact were conducted, including economic impact of selected projects\(^3\). In the case
of Laboratorio, one of their most successful project ideas (a taxi booking system in
Mexico City) created a significant economic impact which serves as a key example
for Laboratorio to prove that Open/Social Innovation can have significant economic
impact\(^4\).

### 2.6 Operational Models

Based on their operational implementation methods, the case studies could be
grouped into three models of cross-sector collaborations\(^5\). It is important to note that
the examples examined, while diverse in their structures and approaches, may not
represent all of the possible collaborative models being used globally. Instead they
should be viewed as examples that highlight different possible approaches.
However, this exercise is exclusively based on the small number of initiatives
researched and should only be understood as a means to group the various
approaches within the confines of this study.

The 11 case studies can be grouped into three basic operational models:

- employing a [permanent multi-disciplinary research team](https://www.watershed.co.uk/sites/default/files/publications/2016-09-22/reactreport.pdf) to address issues
  brought forward by business, government or society, and operating as an
  independent research unit/institute;
- fulfilling a [brokerage and facilitation role](http://www.milenio.com/negocios/emprendedores/uber-taxis_cdmx-taxistas_df-usuarios_uber-traxi-cabify_0_536946489.html) and providing meeting and
  experimental space and putting together teams of academics, students,
  businesses, other professionals, and the general public; and
- organising [cross-departmental or cross-faculty collaboration](http://www.milenio.com/negocios/emprendedores/uber-taxis_cdmx-taxistas_df-usuarios_uber-traxi-cabify_0_536946489.html) projects or
  courses within an institution, reaching out to the general public and industry
  depending on projects.

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\(^3\) REACT Evaluation: https://www.watershed.co.uk/sites/default/files/publications/2016-09-22/reactreport.pdf

\(^4\) Newspaper article: http://www.milenio.com/negocios/emprendedores/uber-taxis_cdmx-taxistas_df-usuarios_uber-traxi-cabify_0_536946489.html

\(^5\) Please note the Finance and Governance Tables in Section 2.3 are ordered by the allocated Collaboration Model of the case studies.
There is no strict differentiation between the three models (particularly between Model II and III) with case studies often overlapping to some extent. As noted above, common to all initiatives is a human-centred design and public engagement angle and the multi-disciplinary, cross-sector approach to improve idea generating processes for innovation.

Model I

The defining characteristic of Model I projects is that the multi-disciplinary research to a given problem or challenge was undertaken by a permanently employed team of researchers from different specialisms and disciplines. The involvement of the general public, other experts or businesses is also a strong aspect of these projects. The initiatives have pointed out that it was important to apply the composition of the research team flexibly, in a bespoke manner to the challenge, and to restructure teams after a number of years so that perspectives and approaches remain open and adaptable.

While two of the initiatives (ARS Electronica FutureLab and Laboratorio) are closely associated to an organisation (a Science museum and a local authority), the third initiative (Waag Society) is a more independent research organisation in its own right. FutureLab and Waag Society are the most mature of the case studies.
- ARS Electronica Future Lab, Austria (clients/partners commission projects and delivers solutions by collaborating with the client, including public engagement);

- Laboratorio para la Ciudad, Mexico (focusing on solving societal problems and facilitating citizen participation and input); and

- Waag Society, Amsterdam NL (a pool of researches and experts collaborate with community; citizen engagement is a core aspect of most projects).

**Model II**

Projects in Model II take on a much more distinct ‘broker’ role. Often located off-campus yet closely related to one or a group of universities, a team of managers and co-ordinators facilitate multi-disciplinary, cross-sector research by bringing together businesses with students and other public and private stakeholders, including the general public. In most Model II projects, there is a strong focus on bridging the gap between ‘business’ and ‘academia’ through multi-disciplinary research, whereby the ideas for this research are either sourced from businesses or academics.

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6 This model is close to the Quadruple Helix Model for Innovation.
universities to collaborate for 3-4 months, accommodation is provided for meetings and desks-space for study team members);

- DesignLab, Twente NL (an on-campus, bespoke centre for collaboration, offering meeting and exhibition space for showcasing, and lab space, facilitates cross-faculty academic research and reach out to private sector businesses and public engagement);

- Media Factory, Aalto University, Finland (offers open space for meetings/exhibitions etc., facilitates cross-media sector working, utilising existing lab facilities at partners/universities);

- Demola International Network (same principles as New Factory, but at international level to increase reach of academic and private sector partners); and

- REACT, Bristol, UK (time-limited initiative bringing academics, businesses and the public together around topical themes and issues).

Many of the initiatives in Model II also offer physical space, hubs, and labs to facilitate meetings, research, exhibitions for public engagement and showcasing, designed to foster cross-sector collaboration in a bespoke environment.

Only one of the case studies (REACT) was strictly time-limited due to funding arrangements, and the remainder of the initiatives in Model II were set up to last for the foreseeable future, funded by consortia of public and private partner organisations and other public funding sources.

Model III

Projects in Model III were located within an organisation and sought to improve collaboration across departments or faculties, while also reaching out to the general public, industry and other stakeholders. Public engagement was a dominant driver in all projects to implement the user-focused approach. In a university setting, the request from research funding councils to foster public engagement supported the buy-in of science departments or other, hitherto less engaged disciplines.

The fact that facilitators were located in-house was seen as an advantage by Model III projects to create trust and buy-in across the various departments.
Collaboration Model III

Facilitators of cross-departmental / cross faculty collaboration

- ICI, Australia (CI focus fostering cross-faculty research for students, academics, also reaching out to industry and public bodies for cross-fertilisation with ideas);

- MindLab, Denmark (focus on improving Government service provision by working across departments, with strong service user focus and public engagement); and

- OpenLab, UCSC USA (focusing on cross-faculty, cross-departmental collaboration, including industry engagement and community engagement where appropriate).
3. Aims, Objectives and Motivations

3.1 Introduction

After a brief review of their origins, this Chapter summarises the key aims and objectives across the case studies. The final section presents a number of motivations for each stakeholder group involved in multi-disciplinary research as identified by the consultees.

3.2 Origins

The case studies include some that evolved early on with the internet revolution (Case Study 1 – Waag Society, 1994), when cross-sector collaboration between science/technology and art re-emerged as an interesting approach (Case Study 2 – ARS Electronica FutureLab, 1996), and when ‘public engagement’ and ‘service user focus’ became novel concepts (Case Study 10 - MindLab, 2002).

Most of the more recent initiatives originated when influential individuals felt inspired by these earlier developments and started to promote the implementation of similar projects in their own cities or organisations (Case Study 3 - Laboratorio (2013), Case Study 9 - ICI (2012), Case Study 5 - DesignLab (2015), Case Study 8 - REACT (2012)).

Some of the latter saw these as inspiring opportunities to address industrial decline and to support SMEs by facilitating access to academic R&D thereby fostering economic regeneration (Case Study 4 - New Factory (2008), Case Study 7 - Demola (2008), Case Study 6 - Media Factory (2012)).

Another originated due to a demand expressed by students for more cross-discipline collaboration, innovative approaches and access to facilities and capacities in other disciplines (Case Study 11 - OpenLab, 2011).

3.3 Aims and Objectives

While the 11 initiatives represent a number of different approaches and models of cross-sector collaboration, the core concern for all is to improve society’s ability to
innovate and to develop better, more effective and sustainable solutions to existing problems. All initiatives are based on the assumption that better innovative ideas are needed to tackle current problems and that ideas for solutions can more effectively be generated through multi-disciplinary, cross-sector collaboration.

In addition, addressing social and environmental challenges (the common good) and the improvement of public service provision are further prime motivators and rationales across all of the case studies. Economic development, however, is not always seen as the prime motivator in this context.

Inherent with the communication function of art and culture, all initiatives aimed at utilising state-of-the-art technology, media and communication and public engagement for greater participation in solution-finding processes.

Initiatives involving student teams in cross-departmental collaboration also have the objective of developing their entrepreneurship skills and know how, and gaining experience by working jointly with the private sector and real-life business concerns.

Many of the initiatives also embrace learning about social entrepreneurship as part of their objectives. Many university-based initiatives see an increased student interest in social entrepreneurship with its focus on social agendas, equality, environment and social justice matching the ambition of multi-disciplinary approaches in searching for more effective and innovative solutions and the human-centred development approach.

According to many case studies, young people are most likely to express an interest in multi-disciplinary approaches, keen to learn new skills, with a positive attitude and motivated to contribute towards change, innovation and creating a better world.

### 3.4 Key Motivations

Across all case studies, the motivations for setting up such an initiative differed.

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7 Overwhelmingly, the eleven case studies involved their participants in joint idea generation and co-design of solutions, rather than testing already developed proto-types (a category of collaborative projects in the area of public engagement not covered by this study).
Focus on business development

Some had a clear focus on seeking to support either the creative industries (Case Studies 6 Media Factory and 8 REACT), or the innovative capacity of businesses in general (Case Studies 4 New Factory and 7 Demola International).

Focus on developing innovation and business skills within students

The motivation for others were much more focused on enhancing the innovative potential of students and prepare their progression into business. Examples for this include Case Studies 5 DesginLab, 9 ICI, and 11 OpenLab.

Focus on civic and social development

The motivation for Case Studies 3 Laboratorio and 10 MindLab were clearly relating to improving civic issues and supporting innovative societal development. This was also the case for Case Studies 1 Waag Society, and 2 ARS Future Lab, however in those two initiatives there is also a strong strand of influencing innovative solutions in commercial sectors.

Key motivations by stakeholder group

The following provides a summary by each stakeholder group of their reported motivations and expected benefits as reported by the 11 examples:

Public Sector Funders (research, economic/community development programmes):

- to strengthen the innovative capacity and income base of the creative industries;
- to acknowledge their social responsibility for future generations and to invest in new thinking and innovative approaches to bring society forward;
- to support experimentation and pure research that will not be financed by the private sector as the outcomes are unpredictable;
- to address market failure in the under-utilisation of academic research by businesses and to help build bridges between academia – businesses and between academia – local communities;
to foster public engagement which helps improve the quality of academic research and its accessibility for the benefit of all; and

to increase the potential and capabilities of people to think more creatively.

Local Governments:

- to engage more closely with citizens and businesses and being seen to listen and serve their needs better;
- to be perceived as an innovative public authority;
- to improve the effectiveness of local service provision and to meet citizens’ and business’ expectations; and
- to find more efficient and cost effective ways to provide local services.

Academic Institutions:

- to stay up to date in R&D including Open Innovation approaches;
- to improve the quality and practical applicability of their research across disciplines and for society as a whole;
- to attract fee paying students and offer an interesting, contemporary education;
- to comply with funders’ requests for public engagement;
- to improve the relevance of their research to other disciplines, to create interest in their research and attract further funding;
- to generate income;
- to bridge the gap between them and businesses / local communities; and
- to improve their profile in collaborative working and to improve their partnership with a range of stakeholders.

Private sector companies:

- to benefit from R&D that is provided free of any risk;
- to increase know-how in working with the academic sector;
- to screen talented graduates for potential recruitment/employment in future;
• to gain innovative, competitive advantage and long-term market success;
• to find solutions for key issues affecting their production / services;
• to fulfil their corporate and social responsibility; and
• to follow the example of big companies.

Students:

• to have a practical, real life focus in their study;
• to help contribute towards big societal/environmental issues that matter;
• to gain entrepreneurial skills and experience in working with businesses, consumers, users, citizens, improving employment chances in future;
• to have improved access to other disciplines to help implement their ideas and concepts in more unusual, innovative settings;
• to showcase their projects to a wider audience; and
• to gain accreditation towards their study requirements.

Local citizens and communities:

• to have a say in how their cities and services are developed;
• to improve services and spaces to suit their needs and requirements;
• to have access to facilities and equipment needed to realise their own design projects;
• to be involved in something new, relevant and fun; and
• to be included, feel valued and recognised, to learn and improve oneself.

Professionals (Industry Experts, Mentors):

• to further their careers and development opportunities;
• to contribute to positive change in society/environment;
• to be involved in cutting edge research and development; and
• to be part of something new and relevant.
4. Project Approach and Implementation

4.1 Introduction

This Chapter summarises the key principles of the multi-disciplinary approach as implemented by the case studies and presents the operational requirements as reported by the initiatives.

4.2 The Multi-disciplinary Approach

All initiatives embrace the concept of ‘Open Innovation’ as their principal mode of practice (see text box in Chapter 1) and apply a human-centred development and user-focused design approach.

As a prerequisite, all examples expected a participant to be self-motivated and interested in Open Innovation and to display a positive attitude towards learning how to interact, talk, listen, co-create, and share between each other.

In all 11 cases the cross-sector, multi-disciplinary approach was of central importance.

How the examples organised cross-sector/discipline project teams was, however, different. For example, in Model I (Case Studies 1, 2 and 3) permanent teams provided the most accessible and quickest form of involving relevant professionals amongst their staff in responding to client requests for research or generating their own research topics (having said this, it was pointed out that it was important to work with a small team, but frequently re-structuring its composition over time). In Model III university staff (Case Studies 9 and 11) took the lead in bringing together students who enrolled in their multi-disciplinary courses, forming project teams and reaching out to businesses or communities if and when required. The broker and facilitator teams of Model II examples, particularly those with a business focus (Case Studies 4, 6, 7, and 8), required to undergo the most time intensive task in this respect with (a) promoting and encouraging businesses to come forward with challenges they need addressing; (b) vetting the suggested ideas for their feasibility; and (c) promoting and sourcing students across a number of universities and disciplines to form the multi-disciplinary project teams.
Which distinct disciplines were invited or encouraged to join a particular project idea, was left in most cases to experience of the facilitators. In the composition of multi-disciplinary teams, the CI sector was considered an important contributor to the approach (in some cases vitally important (Case Studies 1, 4, 6, 8, 9, 11), but was not regarded as the only or prime promoter or contributor to this approach.

Once project teams were formed, consultees’ experience was that the multi-disciplinary approach is best viewed as a learning process. While continuous professional development and research was key to all, this was less of an issue for Model I examples with their permanent professional teams in place. For those examples involving participants who have never worked in this way before a dedicated learning process was required to bring about effective collaborative working relationships. This was considered more onerous in its application than conventional networking.

A number of consultees emphasised that the learning process aimed to break down existing and traditional forms of behaviours / manners / expectations. For this purpose, initiatives used a number of techniques, professional facilitators, drama and psychological approaches, team building exercises, public round tables, conferences, debates, hackathon-like events, etc. There was also a need to continue facilitation throughout the collaboration should project teams or individuals require further support in these skills.

The consultees agreed that working together effectively across sectors and across disciplines was difficult, time consuming, potentially exposing and requires confidence amongst individual participants. At the same time, there was no certainty if a viable solution could be found to a respective problem/challenge. However, all perceived that the experience of going through a multi-disciplinary project was an excellent and most effective learning experience for the participants at the professional as well as the personal development level.

4.3 Operational Requirements

Across all models and projects, the support of one or two champions was considered hugely beneficial particularly during the early stages of project development. Champions (usually senior professionals, experts in their fields, able to influence stakeholders, widely networked and with numerous professional contacts in their
sector/field) would take a lead in the promotion of the idea for the project, inspire stakeholders to participate and provide relevant strategic and financial support within and across organisations.

The setting up of a consortium was also seen as central to the multi-disciplinary approach (particularly in Model II Case Studies). Consortium members were regarded as important to provide the relevant back-up through networking and linking up of stakeholders across the various public, private and academic sectors and disciplines. Consortium members should be pro-active contributors to the initiative not only at the start-up phase but throughout project implementation.

The organisation of multi-disciplinary initiatives is time-intensive and involves co-ordination and facilitation across a number of different sectors and participant groups. Therefore all projects in Model II and III employed a dedicated team of facilitators and co-ordinators. Their key responsibilities usually were manifold and included sourcing ideas, bringing together multi-disciplinary teams, facilitating public engagements and industry contacts if and when required, and managing the process from the outset to its completion. At times, this team was set up as an at-arms-length independent organisation, or as an internal unit located in a faculty or public body.

As mentioned earlier, good facilitation and learning was offered acknowledging that participants had to learn: ‘how to communicate, listen, speak with each other’, ‘how to learn to collaborate, and think differently’, ‘how to change traditional perspectives and behaviours’. Consultees emphasised that facilitation should be delivered by professionals and trained facilitators and should not be left to ‘networking’ alone.

A longer-term engagement and commitment of collaborative partners was seen as advantageous by many case studies to build trust and lasting networks and relationships. This includes Model 1 case studies particularly with regard to building lasting relationships, influencing policy decision making and changing perceptions.

Particularly in Model II, the availability of a physical space, designed as a focal point for collaboration was an important feature of most initiatives and at times linked to urban development/regeneration (such as in Case Studies 1, 4, 6 and 8 where old industrial buildings provided the relevant space for the initiatives and often also relating the name of the initiative, such as ‘New Factory’, ‘Media Factory’). To have a dedicated meeting space for the various cross-sector participants to come together was seen as an important facilitating factor for collaboration. Some initiatives offered
extensive ‘hubs’ including research labs, exhibition space, but also to invite the
general public to showcase ideas and developments, raise awareness and to attract
interest and buy-in. In projects where public engagement was of the essence, i.e. in
Model I (Case Studies 1 and 2), choosing central, attractive locations with high
volume footfall were important to reach the public and to attract future participants.

Although the most mature examples (mostly in Model I) managed to attract private
sector commissions over time, all case studies depended on public sector funding
sources. At times this was through core funding via lead partners and consortium
members, but mostly through competitive research tendering across a wide range of
funders including local, regional, national and European. Relevant procurement
expertise was, therefore, vital to all examples.

Some of the longest established initiatives (Case Studies 1 and 2) emphasised the
importance of ring-fencing a percentage of their annual budget for pure research to
remain at the cutting edge of development and to identify areas of interest for future
projects.
5. Achievements and Evidence

5.1 Introduction

This Chapter summarises the reported outputs and achievements across the 11 case studies and explores if and how the achievements are being evidenced.

5.2 Outputs and Achievements

Reported outputs were closely in line with the various motivations and expectations of the different stakeholder groups (see above).

All initiatives aimed to work on collaborative projects that would have a real-life relevance and which would achieve feasible and realistic outputs. The sourcing of project ideas and their appraisal usually incorporated criteria such as fundability (current interests and priorities of funding bodies) (Case Studies 1, 2 and 3) and practicalities in terms of their suitability to be addressed by a multi-disciplinary team and in the given time span available to the respective project (Case Studies 4 and 7, but also university-based examples like Case Study 9 and 11). Assessing any future social or economic impact was considered very difficult to undertake considering that the solution for a given research problem is – naturally - unknown at the outset. Only one case study (Case Study 3) prepared logic models for its project ideas, but an economic impact appraisal was – perhaps understandably – not undertaken by any.

An acceptance of the risk that a project might not achieve any realistic or feasible outputs was seen by many as a pre-requisite as the outcomes of any research project are uncertain. A number of initiatives (e.g. Case Studies 4 and 7) solved this well whereby businesses only paid/licenced the result if they were satisfied with the result of the collaboration.

However, even if projects would not be completed with tangible outputs, all consultees perceived the process itself as an important and much valued learning experience providing new skills for those involved.
As such, the acquisition of new skills and experience, was considered a valid and important output. This included the expectation that participants who have acquired the relevant skills\textsuperscript{8} to generate better ideas and innovative solutions in future.

As such, many initiatives understood their ultimate output and achievement as one affecting attitude, behaviour and capability of those participating. “We need to work together to tackle the issues we are all facing together” (particularly Case Studies 1, 3, 9, 10, 11)

Few case studies stated that they were asked to monitor detailed performance indicators, mostly reporting on activity-based performances such as ‘number of participants’, ‘attendance at exhibitions / workshops / events’, ‘number of downloads of publications’, ‘number of licences bought’. Monitoring and tracking of outcomes, i.e. what happened after the collaborative project completed, was mostly not pursued except for a very few successful initiatives (mostly relating to projects in Model I, i.e. those that were established longest and with a range of private sector partners involved including Case Studies 4 and 7 from Model II).

5.3 Potential Performance Indicators

Most projects seemed unaware of how to measure and monitor qualitative performance apart from demonstrating their achievements via case study research and showcasing. In terms of performance that could potentially be measured (but usually isn’t), consultees identified a number of outputs for each participant group involved in a multi-disciplinary, cross-sector project as shown below:

<table>
<thead>
<tr>
<th>Across all participant groups</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased ability to think more broadly and appreciate difference</td>
<td></td>
</tr>
<tr>
<td>Improved communication skills, team working abilities, social skills</td>
<td></td>
</tr>
<tr>
<td>Increased awareness of user/client/consumer needs</td>
<td></td>
</tr>
<tr>
<td>Increased adaptability and flexibility in developing and using services</td>
<td></td>
</tr>
<tr>
<td>Improved entrepreneurial mind-set</td>
<td></td>
</tr>
<tr>
<td>Improved attitude, appreciation of opportunities</td>
<td></td>
</tr>
<tr>
<td>Improved critical and creative thinking impacting on generating better ideas</td>
<td></td>
</tr>
<tr>
<td>Increased knowledge and awareness of other disciplines and sectors leading to improved quality of services, products, understanding and appreciation</td>
<td></td>
</tr>
<tr>
<td>Increased awareness for innovation</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{8} See performance indicator lists on page 31
### For local government
- Increased attendance at city events / exhibitions
- Improved service provision
- Increased interest in publications, website hits, downloads, enquiries
- Increased and improved partnerships and reciprocity in participation
- Improved relationships with citizens and businesses
- Improved image and profile as positive innovator
- Increased job satisfaction

### For universities and promoters of collaborative projects
- Increased attendance at events, exhibitions, show casing research
- Improved quality and presentation of research findings through visualisation, design inputs
- Improved public engagement (to satisfy funders requirements)
- Increased quality of research findings
- Increased interest in publications, website hits, downloads, enquiries
- Increased applicability of research outputs
- Increased and improved partnerships and reciprocity in participation
- Improved image and profile
- Increased demand for collaborative courses/modules
- Increased membership and engagement – organisational growth
- Increased income through student fees
- Income from sold licences
- Returning business partners for new collaborations
- Increased self-sufficiency (increased private sector funding for projects)
- Increased number of spin outs
- Job creation
- Continuous success in receiving funding from Research Funds
- Increased job satisfaction

### For companies
- Access to risk-free R&D implementation (to raise awareness of the value for SME to collaborate with academic research teams)
- Improved efficiencies
- Improved quality of products/ services
- New product / service development
- Job creation
- Access to screening graduate talent
- Improved client/consumer focus – better products/services – increased income
- Increased number of contacts to wider range of partners/networks
- Fulfilling corporate and social responsibility obligations
- Increased profile and image
5.4 Monitoring and Evidence

As requested by their funders, the majority of initiatives measured their success exclusively through activity indicators ('up-take of courses', 'attendance numbers', 'number of visitors at exhibitions', ‘downloads of publications’, ‘usage/capacity of facilities’, ‘participation rates’, ‘occasions when the approach has been replicated elsewhere’).

Particularly the longer established initiatives also evidenced their success by the fact that they have been successful in growing in staff, funding volume and range of projects over the years. An increased demand and interest in cross-sector and public engagement by funders, university, as well as the general public, also provided justification for them.

The majority of initiatives understood learning to be one of their core impacts in terms of fostering creative thinking, open minds and contributing to solving problems better and more innovatively in future. However, due to an assumption that this impact will be long-term, and attribution difficult to establish, none of the case studies attempted to measure or report on this. Having said this, accredited university courses and modules (Model III, Case Studies 9 and 11) are most likely to have relevant mechanisms in place.
In summary, validation of success was drawn from:

- satisfaction surveys of participants;
- returning partners/businesses/organisations (rarely monitored);
- increased up-take and interest in activities;
- increased intensity of partnership work and reciprocity (rarely monitored); and
- successful crowdfunding sourced for projects/spin outs (rarely monitored).

In terms of economic impact, it is relevant to note that most initiatives did not directly aim for economic impact, therefore measurement of such was not pursued. In individual cases (Case Study 3), it has been reported that evidencing economic impact had had a useful role in justifying local government investment in collaborative approaches.

Economic development as such was only directly addressed by initiatives such as the New Factory Tampere (Case Study 4), and the associated Demola International Network (Case Study 7) where the focus of projects was on business needs. In addition, Case Study 8 undertook more detailed evaluation. But also here, measurement of impact did not seem to go beyond that of monitoring the number of licences sold (number of jobs, and number of spin outs created might also be recorded).
6. Success Factors, Challenges and Learning

6.1 Introduction

This Chapter summarises the various success factors and challenges reported by the eleven case studies and completes with a presentation of some of the key learning points and recommendations suggested by the consultees.

6.2 Requirements for Success

The consultations enquired about the key factors for successful project implementation, and those that are believed to be important for any future initiative to be established elsewhere.

The identified success factors were similar across all initiatives and Models and included:

- effective support at the top, strategic and policy influence, a favourable environment regarding multi-disciplinary approaches and open innovation;
- a genuine interest and positive attitude from all participants in learning how to collaborate (respect, attitude, openness to change, sharing of ideas);
- good level of funding and longer term funding to provide consistency, room for pilots and experiments, and time for building relationships and trust;
- consistency of staff (in Model I permanent staff, in Model II and III facilitators and co-ordinators) – noting there is value in restructuring or refreshing a team every 3-5 years;
- ability to access large numbers of academics / students / the public and excellent communication skills to inspire, stimulate interest, and develop relationships;
- good facilitation skills and know-how in ‘translating’ ideas into projects; and
• accreditation of multi-disciplinary courses / learning modules (Model II and III initiatives).

Working with likeminded people is also key to the successful implementation of a multi-disciplinary approach. An open mind and curiosity are required, combined with a freedom to explore ideas and relationships.

A long-term commitment regarding funding is also important such that initiatives have the opportunity to develop, grow trust and create a track record.

6.3 Main Challenges

Even among the long established initiatives (Model I), the need to source funding across a variety of sources (research programmes, business development, at the local, national and European levels) was perceived as a persistent and ongoing challenge. Public sector funding sources were important to all initiatives, even those where companies bought licences at the end of the project, as project participation needed to be free of risk and cost to them (Case Studies 4 and 7).

Clear communication and effective training of the multi-disciplinary approach was considered as a demanding task across all Model II and III projects, so that the initiatives changed mind-sets, cultures and attitudes. Projects needed to be particularly effective in this when they were only short-term, or when initiatives sought to change institutional culture on a larger scale (Model III, Case Study 10).

‘Speaking the same language’ across sectors and dedicated facilitation was crucial to all initiatives, at times initiatives employed external experts to support ‘team building’, external communication or other reach out challenges, but warned at the same time not to ‘overload’ projects with too many ‘experts’.

Measuring outcomes and evidencing impacts was perceived by most as almost impossible, limiting their reporting to activity and results-based performance indicators. Most initiatives relied on their funders’ understanding of the overall concept of multi-disciplinary approaches and the acceptance that lack of success constituted a learning experience and not failure.

A number of practical challenges included:
• keeping a clear focus on the research question in such an ‘open’
environment;

• manage expectations from the outset;

• be flexible and adjust quickly to unexpected research findings;

• ensure sufficient time is made available to continuously raise awareness of
the approach (new staff, new partners, the public) and to maintain and build
relationships; and

• ensure that entrepreneurial skills training is incorporated into the initiative.

6.4 Key Learning Points and Recommendations

The following list presents a range of recommendations from across the eleven case
studies. Some of the most often mentioned recommendations were:

• “work with people who believe in the ‘Open Innovation’ and collaborative
approach” (while ensuring to raise awareness of the process to attract new
participants interested in the approach); and

• “provide sufficient time to learn the multi-disciplinary collaborative mind-set”.

In the following, some of the key learning points of the initiatives have been
summarised (often experienced across a number of the case studies):

• Case Study 1 (Waag Society) recognises the need for their ‘own’ research
and generation of ideas to keep up to date and at the forefront of
development. 15% of their overall budget is ring-fenced for blue sky thinking
and pure research;

• Initially to do large events with an ‘open ideas’ approach, was too much and
too difficult to manoeuvre. A selection process of the most viable ideas goes
further and mechanisms have been developed to narrow down ideas (focus
groups, defining strategies) to make the process more manageable (Case
Study 3 - Laboratorio);
• **Ensure openness and freedom** to explore real world questions and problems (which are the key driver) (Case Study 2 – ARS Electronica);

• Co-location of the consortium partners in a multi-disciplinary hub supports a **conducive collaborative environment** (Case Study 6 - Media Factory);

• **Reaching out further** to more academics beyond those immediately involved in the project would have been good (Case Study 8 - REACT);

• **Everyone needs to learn** how to collaborate, how to listen and how to develop a product jointly, collaboratively this is not easy (Case Study 4 - New Factory);

• **Regular face-to-face interactions** are important to benefit and learn from each other, i.e. between students and companies, partners, etc. (Case Study 7 - Demola);

• Being closely incorporated within the overall rationale of the University of Twente and its **entrepreneurial spirit is most beneficial**. (Case Study 5 - DesginLab);

• The user-centred approach is a challenge (it is not as modularised as a start-up business approach) - **it is an organic process!** (Case Study 9 - ICI);

• Creative thinking, brainstorming requires a physical space – a ‘**safe space for experimentation**’ (events, seminars, workshops) (Case Study 10 - MindLab); and

• Although most results are open-sourced, a small amount of **unique ideas are protected** (Case Study 11 - OpenLab).

Scanning through the case studies’ websites\(^9\) is inspirational and recommended to appreciate the large range of projects and topics in which they are engaged. Some of the most extensive ranges of collaborative projects can be found in the following:

• Waag Society: [http://waag.org/en](http://waag.org/en);

• ARS Electronica FutureLab: [https://www.aec.at/futurelab/en/](https://www.aec.at/futurelab/en/); and

• Laboratorio Para La Ciudad: [http://labcd.mx/labforthecity/](http://labcd.mx/labforthecity/).

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\(^9\) For the website links and further information, please see each case study summary in Chapter 2 or in the more detailed Case Study Appendix. In both areas, the relevant hyperlink to the website is provided in the title/title box of the respective case study.
7. Conclusions

7.1 Introduction

This Chapter presents the researchers’ views and conclusions of the study findings.

The Chapter is structured in line with the key research questions as identified in the study brief and in consideration of the transferability of the findings to a Scottish context.

7.2 Supportive Institutions / Governance Frameworks

All case studies confirmed that success is dependent on a supportive institutional environment. In most cases, this included four core aspects:

- gaining the support of one or two key strategic champions at policy/strategy level (‘rain makers’);
- creating a small, but influential consortium of cross-sector partners;
- providing sector insight, contacts, reputation, and support with promotion and funding of the initiative; and
- setting up a dedicated team/unit in charge of co-ordination, facilitation and project management.

Some of case studies were created in a direct association with an established organisation, such as a science museum (Case Study 2 - ARS Electronica), a local authority (Case Study 3 - Laboratorio), government department (Case Study 10 - MindLab). Others were embedded within a university structure and governance framework (Case Study 11 - OpenLab, Case Study 9 - ICI, Case Study 5 - DesignLab, and Case Study 6 - Media Factory), and others were created as a more self-standing unit to facilitate cross-sector collaboration more independently (Case Study 4 - New Factory, Case Study 1 – Waag Society, and Case Study 8 - REACT).

The importance of champions was key throughout but specifically from the outset of setting up and helping to bring together a consortium. Each consortium member
performs the role of a champion in their own discipline/sector to support the initiative for networking, promotional and contact purposes.

It was clear from all research findings that cross-sector, multi-disciplinary collaboration had a substantial educational effect even if no viable solutions to a given problem were found. While all projects reported very successful project findings, the risk of not achieving viable outcomes needed to be accepted (as with all research).

Investors and funders must, therefore, accept a certain risk and their commitment relied on their conviction that the collaborative approach was effective in creating better innovative solutions and that the learning achieved through the process would have positive long-term outcomes.

In financial terms, no case study was able to self-fund or be independent of public finance. Only the longest established examples managed to increase their private sector income slowly over time. It is interesting to note that generating private sector income was primarily pursued by the more independent initiatives (Case Studies 1, 2, 4 and 7). However, the majority of examples relied heavily on competitive tendering for public funding with the exception of those that were integrated into local and central government structures.

### 7.3 Successful Operational Methods

Each of the case studies perceived itself as successful in bringing about positive change and in improving the skills of participants in their approach of finding innovative solutions, thinking more creatively and widely when tasked with solution-finding processes.

The research identified numerous essential success factors, pre-requisites and recommendations for wider collaborative activities which were very similar across all projects and Models.

Overall, the 11 projects followed a similar sequence of operational events. The process was usually broken down into a number of phases:
Preparatory Phase

The preparatory phase of any collaborative project required care, time and sufficient resource. The better project ideas were selected, the more likely was a successful process and positive outcome. The preparatory phase typically involved:

- the gathering of potential challenges/issues/problems to be addressed. This often involved a comprehensive promotional campaign or calls to encourage stakeholders (businesses, citizens, service users, professionals) to come forward with their suggestions;
- a detailed project selection process whereby the ideas were carefully vetted for their appropriateness to the process, their realism and feasibility in terms of the timeframe given and funding available to the collaborative project; and
- an appraisal of the future fundability of the collaborative project itself or its results (depending on the implementation model).

The preparatory phase was usually accomplished by the team/unit of the collaborative initiative. At times, the appraisal and vetting of the ideas involved focus groups of experts and need assessments with the wider public, but this varied from project to project.

Implementation Phase

It is at the operational level, where a distinct difference of models could be observed. While the sequence of tasks (from identifying ideas/problems, to vetting the ideas, to converting the idea to projects) remained largely similar across all the initiatives, differences were evident in terms of who was actively involved in conducting the collaborative research. Here, the study identified three key models:

- **Model 1**: the initiatives had their own, permanently employed, multi-disciplinary team of professional researchers (Case Studies 1, 2, and 3) who worked on finding solutions to a posed challenge. This involved the inclusion of external experts, community engagement, business engagement at different stages and to different extent;
- **Model 2**: in these initiatives (Case Studies 4 to 8), a team of facilitators brought together a temporary multi-disciplinary team from a range of sectors...
and facilitated the collaborative working between them. This model involved a particular focus on **learning on how to collaborate** as the team members were new to each other and engaged for a relatively short period of time. A number of practical recommendations were gathered though the primary research. A further distinct aspect was that most projects provided a bespoke physical space to foster collaboration, showcasing and public engagement; and

- **Model 3:** in Case Studies 9, 10 and 11 projects were based within an organisation and had a particular focus on **facilitating in-house multi-disciplinary working** between departments or faculties. At the same time, public engagement and work with industry and other external stakeholders were important drivers.

**Completion Phase**

All case studies were faced with the speed of new developments regarding open sourcing, IPRs, copyrights, crowdfunding etc. in an internet age opening up new opportunities in new settings.

This was particularly relevant for those projects that were more embedded in a university setting with the collaborative approach implying shared ownership of the research process and the results achieved. Although initiatives reported that spin-out and start-up companies were created by those participating in the project, in most cases (and linking to the fact that the initiatives received public funding) the results of the collaborative research was open-sourced and therefore accessible to all. Many initiatives used the completion stage to showcase findings in public events. One initiative (Case Study 11) stated that research results with high commercial potential were, however, protected from open-sourcing.

Completing a research project was more straightforward for those initiatives that undertook private sector commissioned collaborative research and those initiatives focusing on distinct business challenges. In both scenarios, the results of the research were delivered to the client (Case Study 2) or licences of the developed result/s were offered for purchase by the business that posed the challenge in the first place (Case Studies 4 and 7).
The majority of initiatives utilised the research findings to inform the design of new collaborative projects and research.

7.4 Outcomes and Validation of Achievements

The study findings have demonstrated that a range of outcomes is achievable through collaborative approaches for each participant group. While Model II and Model III projects had a particular educational focus (learning how to work in a collaborative manner), all initiatives aimed to provide practical, useful solutions to the posed challenges.

Many of the initiatives perceived themselves as operating in a societal and environmental context rather than being driven by economic development aims (with the exception of a small number of cases such as Case Studies 4, 7 and to some degree 8). However, the perception of not being driven by economic development aims, might be rooted in a certain lack of awareness by the promoters of the initiatives as to how changes in attitude, behaviour, skills and abilities (all associated within a ‘cultural’ context) are actually impacting on the economy, such as job creation, improved productivity, increased quality/efficiency of services, new services and products, etc. Although many were supporting social entrepreneurship and social business models (Case Studies 1, 2, 3, 11), few if any recognised that social businesses create economic impact and that the economy constitutes a part of society and that businesses are part of a community.

Although many research funding councils as well as EU funding are concerned with generating economic impact, this is not consistently applied in all their priorities or measures. In the case studies, funding must have originated from those measures and funding streams that were less focused on economic impacts, as most interviewees stated that their reporting requirements was limited to stating activity and output achievements.

The continuing growth of the initiatives and their continuous success over many years in increasing their range and scope of activities and strategic influence and the increasing interest expressed by the general public, companies and the funding sources themselves was usually seen by the initiatives as sufficient proof that funding for multi-disciplinary, cross-sector collaboration was justified.
Successful results were usually demonstrated and promoted via the websites of the initiatives.

### 7.5 Feedback from Stakeholders

On completion of the study, a learning workshop was conducted with a range of relevant stakeholders including the Scottish Funding Council, Creative Scotland, Scottish Enterprise, FE and HE representatives, local authorities (Dundee, Glasgow), and Interface.

The study team provided an overview of the key findings of the research and together with the workshop participants considered the relevance of each of the three collaborative models for Scotland in more detail.

#### 7.5.1 General Discussion Points

Some of the key discussion points following the presentation included (study team response in italics):

- **Comment 1:** It should be noted that REACT was a project implemented by Pervasive Media Studio/Watershed, which itself is a more permanent Model II type of initiative. *(Watershed recommended a focus on REACT when contacted by the study team)*;

- **Comment 2:** There is a five-strand set of indicators that has been developed by the evaluators of the REACT project. This clearly demonstrates that the impact of collaboration and cross-sector work can be measured; whereby much of the benefit of participation lies in the learning achieved by the participants. *This observation was confirmed by EKOS as evidenced by the various case studies and also our interpretation presented in Section 5.3 and 5.4*.

- **Comment 3:** The participants of the initiatives are transient, even if the initiative itself, i.e. its staff and infrastructure is permanent (i.e. students come and go; funding and projects come and go) – but it is important that facilitators and co-ordinators remain constant and therefore grow and share their expertise with every cohort. *This was confirmed by all of the case studies*;
• Comment 4: Is it really true that other countries and funders do not require more detailed measurement of economic impacts? The UK seems to be very much focussed on measuring economic impact – in other countries this is not done to that extent. *This was confirmed by most cases included in the study, which reported that funders did not require them to report economic impacts. Although impacts are created, they are not measured as it is not requested by funders, although it as noted that this may be a requirement in some discrete projects undertaken by the case study initiatives.*

• Learning from the governance and management structures of these initiatives is crucial, as good quality governance renders an initiative successful or not.

7.5.2 Scottish Context for the three Collaboration Models

In three break-out groups, the workshop allowed for more detailed discussion of the three collaboration models. The following observations were made for each collaboration model:

**Model I - Permanent Multi-disciplinary Teams**

The three case studies of this Model strongly appealed, but stakeholders found it more difficult to consider their application in Scotland due both to their origin, based on the entrepreneurial initiative of individuals, and the current funding environment, which promotes project based funding models and tends to direct funding towards universities (for projects such as this).

Some also felt that previous initiatives (the Lighthouse and the Third Eye Centre (now the CCA) were mentioned) could be considered Model 1 – type of projects already undertaken in Scotland and this experience should provide a basis to build on for the future.

At the same time, the participants felt that there was a demand for new collaborative initiatives to emerge concerning non-digital culture in Scotland and space (and resources) should be made available to support individuals with relevant ideas for less economically focused initiatives.
Table 7.1: Model I - Permanent Multi-disciplinary Teams

<table>
<thead>
<tr>
<th><strong>Enablers</strong></th>
<th><strong>Barriers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- HE connections essential to provide a flow of</td>
<td>- Different partner motivations</td>
</tr>
<tr>
<td>creative people</td>
<td>- Access to facilities / resources with HEIs – high quality but not</td>
</tr>
<tr>
<td>- Initial supply-led approach to demonstrate</td>
<td>accessible enough</td>
</tr>
<tr>
<td>value / appeal</td>
<td>- Economic environment</td>
</tr>
<tr>
<td>- Authentic motivation required</td>
<td>- Funding pressures</td>
</tr>
<tr>
<td>- Institutional collaboration</td>
<td>- Project-based funding models</td>
</tr>
<tr>
<td>- Serendipity - finding the right people and</td>
<td></td>
</tr>
<tr>
<td>giving the right support at the right time</td>
<td></td>
</tr>
<tr>
<td>- Funding to develop the right platforms</td>
<td></td>
</tr>
</tbody>
</table>

The conclusion from the group was that Model I type of initiatives are of interest to Scotland, but probably unrealistic to pursue at scale at this time.

**Model II – Cross-sector Brokers and Accommodators**

The workshop participants felt that the concept of Model II-type of initiatives has been around for a long time in Scotland (particularly regarding knowledge transfer initiatives including the Innovation Centres). Nevertheless, participants felt that the study examples were of considerable interest to them due to their incorporation of wider, multi-disciplinary, multi-sector aspects of collaboration, which was considered to be less common in Scotland. As such, the case studies could provide some good ideas regarding how to build on and develop the existing Scottish environment. It was hoped that through this, a new, inspiring approach could be introduced which could help lift the current sense of frustration with existing processes across the CI sector.

A number of elements portrayed by the case studies were of particular interest to the group including:

- the wider scope of initiatives utilising a multi-disciplinary and cross-sector approach as a sort of package of modularised actions;

- the focus on facilitation whereby traditional patterns of thinking are broken down to allow for new idea generation and better communication to evolve across sectors;

- the wider scope of some of the case studies to include students as well as academics; and
the physical manifestation of collaboration by providing the relevant infrastructure and physical hub for cross-sector interaction to take place. This brings a sense of longevity and reliability. At the same time, it would be good to also think of this as a virtual hub particularly with a view to improving accessibility for the remote locations in Scotland.

Further observations by the participants considered some of the challenges of Model II initiatives. These included:

- governance is an important issue, including that students (or any other participant) are not exploited; fairness is important!
- the location of such a Model II hub would need to be considered (see also comments regarding a virtual hub which could make the project distinctive?)
- to ensure the sustainability of such an initiative could be challenging. In other countries, such as Finland, long-term funding for the operationalisation of initiatives seems more forthcoming.

<table>
<thead>
<tr>
<th>Enablers</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Funding</td>
<td>- Funding</td>
</tr>
<tr>
<td>- Building on what exists</td>
<td>- It might still be challenging to make</td>
</tr>
<tr>
<td>- Ready for something new, inspirational</td>
<td>these type of initiatives distinct</td>
</tr>
<tr>
<td>- Integrated facilitation – developing a joint</td>
<td>enough to attract attention and buy-in by</td>
</tr>
<tr>
<td>language</td>
<td>stakeholders and funders</td>
</tr>
<tr>
<td>- Providing space and acceptance that</td>
<td>- Universities need to accredit and validate</td>
</tr>
<tr>
<td>failure represents learning</td>
<td>participation in such an</td>
</tr>
<tr>
<td>- Understanding that research, innovation and</td>
<td>initiative for students and academics</td>
</tr>
<tr>
<td>new approaches have to be risk taking by</td>
<td>– this can take a long time to be set up;</td>
</tr>
<tr>
<td>nature</td>
<td>- The various institutions could be</td>
</tr>
<tr>
<td>- Buy-in to the Model needs to be immune to</td>
<td>competitive in nature and attitude, this</td>
</tr>
<tr>
<td>political change, i.e. the longevity should</td>
<td>would need to be overcome by</td>
</tr>
<tr>
<td>be ensured</td>
<td>something like an agreement that results</td>
</tr>
<tr>
<td></td>
<td>and outcomes would be all open sourced or</td>
</tr>
<tr>
<td></td>
<td>such like.</td>
</tr>
<tr>
<td></td>
<td>- Physical focus could be a</td>
</tr>
<tr>
<td></td>
<td>disadvantage for remote locations</td>
</tr>
</tbody>
</table>

The conclusion from the group was that Model II type initiatives are of interest to Scotland and closer consideration should be given to support the development of some of the elements demonstrated by the case studies by building on existing initiatives.
Model III – Facilitators of Cross-departmental/faculty Collaboration

Whilst participants expressed a high level of interest in this model, the group was certain that this type of collaboration is already widely operationalised by universities across Scotland (there was a feeling that cross-departmental/faculty collaboration should take place as a matter of course). However, participants also acknowledged that there are areas for enhancing and improving collaborative efforts within and across universities. This could include addressing certain training needs for individuals to develop their skills in collaboration.

Additional consideration was given to widen expanding Model III initiatives towards Model II actions. For example, ‘Design Thinking’ programmes (i.e., creative problem solving) could be delivered by private sector service design companies (who are actively involved in this type of training already). Industry organisations could also provide training in this area as they are already familiar with human centred approaches.

Table 7.3: Model III – Facilitators of Cross-departmental/faculty Collaboration

<table>
<thead>
<tr>
<th>Enablers</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal partnerships</td>
<td>Funding dictates organisational priorities</td>
</tr>
<tr>
<td>Budget situation (can be both</td>
<td>Policy shift – to STEAMD(^{10})</td>
</tr>
<tr>
<td>an enabler and a barrier</td>
<td>Leadership mandate – needs to be</td>
</tr>
<tr>
<td>Leadership mandate</td>
<td>embedded in an organisation (needs to be</td>
</tr>
<tr>
<td></td>
<td>understood by whole organisation)</td>
</tr>
<tr>
<td></td>
<td>Different ‘language’ can be an internal</td>
</tr>
<tr>
<td></td>
<td>barrier in an organisation</td>
</tr>
<tr>
<td></td>
<td>Are the budgets sufficient to support</td>
</tr>
<tr>
<td></td>
<td>and develop this type of collaboration?</td>
</tr>
</tbody>
</table>

The conclusion from the group was that Model III type of initiatives are of interest to Scotland, but are already pursued by many universities (or should be on the agenda of other universities as a matter of course). However, providing support to enhance and widen existing collaborations across more sectors as represented by Model II type of initiatives could be desirable.

Regarding Model 1 initiatives, the group highlighted the V&A project in Dundee\(^{11}\) in line with Case Study 2: ARS-Electronica).


\(^{11}\) [https://www.vandadundee.org/building-vanda-dundee](https://www.vandadundee.org/building-vanda-dundee)
7.6 Scope for Applying a Collaborative Model in Scotland

In considering the potential to apply collaborative models such as those outlined in the study in the context of Scotland, the studies suggest a number of considerations, as discussed below.

Purpose

First of all, it is critically important to be clear about the purpose of any initiative. None of the case studies were established with a view to developing innovation in the creative industries. Instead, and in line with the study brief, all were concerned with the instrumental benefits that creativity can bring to wider innovation contexts. This is, in fact, consistent with the findings of Work Package 1 of the current research programme that creative disciplines in Scottish universities tend more often to work with non-creative than they do creative businesses.

Thus the first question to be considered is the purpose and focus of any collaborative model. The Innovation Centres, SFC’s flagship initiatives for promoting innovation through university and business interaction, have taken a strongly economic focus and are aligned to industries/ markets (e.g. Construction, Oil and Gas) or to technologies (e.g. DataLab, Censis). Many of the case studies discussed here have tended to take a broader approach that is based more on identified social, environmental or economic challenges than it is on the development of technologies with commercial potential (although this can be an output).

Much, therefore, depends on the purpose and objectives of any multidisciplinary initiative. If an industry-driven model focussed on economic development gain was the preferred approach then some of the case studies within the ‘honest broker’ model would offer useful learning about how these can be delivered. If, on the other hand, a more social/civic model was adopted, then some of the independent examples or those with a stronger lead by a local authority or government would be more useful to consider. Alternatively, if the aim would be to support academic institutions in improving their abilities in public engagement or enhancing the innovative capability and entrepreneurial skills of their graduates and staff for the
benefit of the industry in future, then some of the more university-based examples would offer much learning.

The case studies have shown that there is an opportunity for creative disciplines within HE and FE to play a role in working with industry and other disciplines to support innovation activities. Here, their particular strengths lie in communication and awareness raising (partly through their public engagement agenda and partly through attracting businesses to interact with academia and wider partners), in combination with their tendency to be early adopters and users of innovation and ‘translating’ abstract into something tangible. There may be more that could be done in relation to involving creative disciplines (in particular design) in the process, but there may also be potential for something more focussed in this area (and which could be the focus of a bid to the new AHRC Creative Clusters Programme\textsuperscript{12}).

Here, the learning from the case studies is useful, and the first step in considering the potential is to give due consideration to the aims and objectives of any multidisciplinary innovation initiative. This is critical, as subsequent choices will depend in large part on the objectives that are defined. Valid questions regarding these choices would include:

- whether the purpose is to be fundamentally economic or social (recognising that this is not a binary choice);
- the thematic or market areas in which the initiative will focus (e.g. healthcare, environmental, civic innovation, digital technology etc.);
- depending on the existing challenges, the range of activities to be undertaken, and the disciplines (academic and industry) that will be required;
- the demand for the outputs of the activities, and the extent to which these can accurately be defined and scaled (including the consideration that awareness of the benefits of collaboration is often low);
- in line with the chosen theme and objectives, the partners to be involved and the most appropriate ‘lead partner’ – whether educational institution, public agency or a third party (independent);

\textsuperscript{12} http://www.ahrc.ac.uk/documents/calls/creative-industries-clusters-pre-call/
• sources of finance and potential income, taking into account the potential of different partners to access different sources of finance; and

• the appropriate scale for the project, particularly in its early stages, as the tendency can be to overestimate the potential for industry income, for example, and set out an ambitious model from the outset rather than starting small and seeking to grow over time.

Governance

There are also issues to consider regarding governance. Many, but not all of the case studies are university-led. This is strongly aligned with the history of innovation support in Scotland, but as the case studies show, it is not the only model. It may, however, be the model that is most likely to attract funding (for example from the research councils or from SFC).

Regardless, what the case studies show is that these projects need an organisation (or indeed sometimes an individual) to take the lead. Public sector intervention can stimulate this with the availability of funding, as, for example, the research councils do when issuing a new call for proposals (e.g. AHRC Creative Clusters), but this funding is often available only to universities thereby prescribing one particular governance structure (although this can be a partnership of HEIs of course).

Governance matters. If a collaborative initiative is managed within a university (or consortia of universities) it will understandably need to deliver benefits to those HEIs. These are typically in the form of academic outputs, teaching benefits and student attraction, research funding and commercial income. An initiative managed within local or national government would be expected to contribute to policy objectives, and a more independently managed project could include some or all of these together with other outputs in line with the interests of that organisation. The governance of any initiative will therefore have a direct impact on what it delivers.

Funding

Funding is a major driver. We have noted the crucial importance of public funding of different kinds in sustaining the case study initiatives, and funding was also an issue raised throughout the learning workshop. Sources of potential funding are not unlimited and, currently, the most promising opportunity is the AHRC Creative
Clusters programme, which points to a university-led model. Funding private enterprise to undertake an initiative such as those in the study can be problematic due to state aid considerations, and a government driven project will depend on the level of political support, and the availability of public finance.

In a similar vein, attracting private finance into these projects can be challenging. While one of the case studies benefitted from substantial investment from one large company (Nokia) this model is the exception rather than the norm, and the wider lesson would seem to be that some caution is required in forecasting the extent private sector income that can be achieved and the timeframe for doing so. In fact, some of the initiatives spoke of the need to ‘de-risk’ the participation of private businesses, even if a future contribution might be made e.g. through a licensing deal on the innovation outputs.

In Scotland, the Innovation Centres have been seeking private sector contributions to innovation projects and have been successful in doing so, even if this is at a level that is often lower than originally hoped13.

A final thought on funding would be that a collaborative creative innovation project focussing on social and civic innovation might also consider public sector organisations as clients (as well as funders). By focussing efforts on innovation problems facing public services (for example) then public authorities could be contributing partners much in the way that businesses might for more commercially focused projects.

Collaborative Working

All of the models have also sought to develop a multi-disciplinary and collaborative approach to innovation. However, a very clear lesson from the study is that this kind of collaboration does not happen through serendipity or by just bringing people together. While some of the projects employed in-house teams skilled in multi-disciplinary collaboration, others invested considerable time and effort in facilitating and supporting collaborative working practices, even including training potential collaborators in how to work in this way. It is important not to assume that

13 Economic Impact Evaluation of the Innovation Centres Programme (EKOS, 2016)
collaboration will happen naturally, and to account for the time needed to support the process.

The involvement of students in many of the projects is also an interesting finding. Pressures on academic time can make long term involvement of full time academic staff challenging, and involving students also has the benefit of developing their innovation capabilities and knowledge. Indeed, for students of the creative disciplines, the benefits of engaging with other disciplines and sectors through collaborative initiatives included:

- increased entrepreneurial skills;
- increased applicability of their talents; and
- improved understanding of how other sectors can benefit from their skills, which also will have a positive impact on employment opportunities\(^4\).

### The Role of Creative Input

A number of case studies focused specifically on the creative industry sectors (Case Studies 6, 8, 9 and 11), while others perceived the creative industries, and creative disciplines within universities, as vital contributors to the multi-disciplinary innovation process rather than as beneficiaries. This contribution was generally as an equal partner alongside other disciplines across science, technology, social science and business.

Disciplines such as design, digital and social media also often played a central role in helping to connect science with the general public, by visualising scientific discoveries, bringing to ‘life’ showcases and events, generating a more vibrant and insightful ‘translation’ of academic research.

In a small number of cases (particularly Case Studies 2 and 11), primary research found that the creative industries were the ideal partners for those disciplines that are less experienced when research funders request public engagement as a requirement for funding. In this way, the creative disciplines were seen as particularly effective as communicators and in bridging the gap between science and

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\(^4\) This issue is addressed in greater detail in the Work Package 2 report.
the general public. As noted in the workshop feedback, universities are also a key source of creative people.

Maintaining a Cutting Edge

The role of universities (and research funding) is central in many of the case studies, and this is driven both by governance and funding considerations, but also by a need to be research-led and informed by current thinking and practice. Indeed, one of the projects (Waag Society) even noted that they allocate a small proportion of staff time to pure research activity in order to keep thinking and knowledge fresh. This is also a common practice within leading technology firms as a means both of ensuring fresh ideas and also supporting employee satisfaction.

Measuring Success

It is striking that few of the case study initiatives had much to offer in the way of quantified impact data to demonstrate the effects of their activities. Success was more often measured in terms of levels of external interest in their work and engagement in their projects and programmes. Indeed, many even commented that demonstrating their impacts in more quantitative ways was too difficult.

On the one hand this suggests an openness on the part of funding partners to supporting projects on the basis that they are delivering something of value, even if there is a degree of risk and uncertainty. However, on the other hand, our experience is that this is less likely to attract support from public funders here in Scotland (and indeed across the UK). The balance likely lies somewhere in between, recognising the inherent risks in any innovation project, but also giving due consideration to how success should be measured (and communicated) at an early stage in the design of any initiative.
## Appendix – Glossary

For clarity, the following definitions have been used:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-Sector</td>
<td>Any initiatives engaging across the business, academic, and public sectors (the extent and range of engagement might vary)</td>
</tr>
<tr>
<td>Inter- or multi-disciplinary</td>
<td>Any initiatives engaging across different industry or academic disciplines (art, engineering, science, business, health, social sciences, etc.) (the extent and range of engagement might vary)</td>
</tr>
<tr>
<td>Cross-Faculty</td>
<td>Inter-disciplinary in a university setting</td>
</tr>
<tr>
<td>Brokerage</td>
<td>Any initiatives introducing, linking up partners across sectors and/or disciplines</td>
</tr>
<tr>
<td>Cross-Governmental</td>
<td>Within and between ministries of government</td>
</tr>
<tr>
<td>Cross-Public</td>
<td>Between national ministries and local municipalities</td>
</tr>
<tr>
<td>Pure Research</td>
<td>Pure research (also known as “basic” or “fundamental” research) is exploratory in nature and is conducted without any practical end-use in mind. It is driven by gut instinct, interest, curiosity or intuition, and simply aims to advance knowledge and to identify/explain relationships between variables. (Wikipedia)</td>
</tr>
</tbody>
</table>
Securing Wider Benefits from Creative Activity through Collaboration

Case Study Appendix

19 December 2017

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We would like to thank all those who participated in the research of the case studies!

This document should be read in conjunction with the report:

Securing Wider Benefits from Creative Activity through Collaboration

Direct enquiries regarding this report should be submitted to:

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1. Waag Society

**Key Facts**

- **Location:** Amsterdam, Netherlands
- **Established:** 1994
- **Lead Organisation:** Waag Society
- **Number of Employees:** 55
- **Website:** [http://waag.org/en](http://waag.org/en)

**Annual Budget:** €3.7m (2016)

**Main Funders:** public, mixed

**Type of Collaboration:** Academia, public, business/industry and community

**Beneficiaries:** Society - Users

Summary of the organisation and its range of activities

Waag Society (Institute for Art, Science and Technology) is a pioneer in the field of digital media. Over the past 22 years, the foundation has developed into an institution of international stature, a platform for artistic research and experimentation, and has become both a catalyst for events and a breeding ground for cultural and social innovation.

Waag Society explores emerging technologies, and provides art and culture a central role in the designing of new applications for novel advances in science and technology. The involvement of artists and designers is paramount to the approach of WAAG Society across all areas, due to their intuitive, curiosity-driven research perspective and critical approach. It is in this sense that Waag Society considers itself as a primarily cultural institution driven by its social context seeking to stimulate imagination and creativity to create unexpected connections to find new ideas, meaning and solutions to society’s problems.

Each project involves several partners, each of whom brings their own, unique perspective. The whole approach is user-focused, therefore, the ultimate beneficiary is the user and society. At the same time, the process of collaboration and cross-sector working provides benefits and learning for each participant at every level.

The range of activities undertaken by Waag Society is considerable. For example, in the field of biotechnology, Waag Society brings together art, design and science and applies the ‘Fablab’ methodology enabling the general public to work in a Wetlab as amateurs together with scientists, designers and artists to work on prototypes, experiments and works of art. The

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Do It Together Bio project thereby contributes to the demystification and democratisation of biotechnology, and it demonstrates that biotech is a new field for the Creative Industries.²

Currently, there are six labs each with a Head of Program and a team of multi-disciplinary researchers that develop project ideas which are financeable. The perception of the user is at the heart of each lab, contributing to the design.

Main Rationale

The underlying rationale for Waag is to use technology to change society in a positive way. The Digital City project made the internet available to organisations and city councils as well as individuals – this aspect of collaboration and cross-sector purpose and delivery is core to Waag principles.

The emphasis of joining up art, science and technology, education, and working in multi-disciplinary teams presents the basis of ‘open innovation’ which is the fundamental core of Waag operations at local, national and European levels.

Essentially, the focus on the user, the public and the community is key.

Development and Implementation of Cross-Sector Approaches

Collaboration and innovation are vital to making progress in society. Waag Society is based on the understanding that innovation needs cross-sector collaboration and that this is driven, particularly, by the creative industries.

How it all started

The beginning of Waag Society is closely associated with the emergence of the internet and associated development opportunities. The core founders were Marleen Stikker, who has a background in theatre and was interested in media and technology in the early 1990s, and Carline Nevejan, an event organiser (Hacker parties) interested in technology and social issues.

There was an essential curiosity and motivation around how the emergence of digital technology and the internet will affect society. To ensure that this was used in a positive way was an important motivation.

At the time (1994), the internet was still a new development and organisations and businesses needed to find out how to use and benefit from it. Based on this demand for know-how, the founders of Waag Society widely promoted digital awareness and internet use. For example, they created the first public website in NL as part of The Digital City (De Digitale Stad, DDS) initiative - a freenet initiative of the cultural centre De Balie and Hack-Tic (what later became internet provider XS4ALL).

Waag focused on the Creative Industries in conjunction with the digital technology development in line with the historic academic connections between arts and sciences as taught in one faculty in the first universities.

The idea to focus on the Creative Industries was also informed by then Mayor of London Ken Livingston’s idea of ‘Creative London’, promoting the city as a centre for creativity to help boost international recognition for the city's unique talents and help young entrepreneurs succeed. Creative Hubs were established across London providing workspace, exhibition and marketing facilities, including seed funds to support business growth.

Institutional Framework and Governance

The Waag Society is 70% funded by public sector sources, including local authority, national programmes, European project funding; 30% is sourced by private sector contracts.

Over the last 20 years, a funding model has been developed based on a number of core budget criteria, including that 15% of funding needs to be ring-fenced for research to drive innovative project design and avant-garde ideas. This is achieved through long term contracts one with a Netherlands CI programme and the other with Amsterdam City.

In addition, the funding model has a threshold of 50% funding from other public sources, two thirds of which are currently sourced from the European Programme Horizon. All 17 contracts are undertaken by project consortia with other local, national and/or international partners. The principles are on ‘open innovation’ and fair, inclusive approaches.

The local authorities/cities have an important role to play in helping to create access and disseminate approaches and projects. For example, education is an important aspect in all areas of Waag activity, but it needs local authority support to enable schools to integrate relevant modules developed by Waag Society, such as fostering collaborative attitudes, etc.

Having become a trusted partner for many institutions and organisations, including the city administration in the project has helped to establish respect, recognition and funding, which is all key to maintaining a high profile and policy influence.
Key Development Phases

In 1994, the two founders had started the ‘Society for Old and New Media’ bringing together ‘real’ events, gatherings with ‘virtual’ technology, networking etc.

Bringing people together, including hackers, arts community and technically minded media created a platform for mixing different approaches, perspectives and skills which can be very creative and innovative. This multi-disciplinary angle has remained a very important approach for Waag.

It is important that people have a critical perspective, seeking to improve and develop a better society/world. In this sense, technology and art are very similar in their core principles (curiosity, critical mind-set) and Waag created an environment and space for this to happen.

It was, therefore, important to have had a physical space for Waag, and in 1996 they won a competition to move into an historic building in the centre of Amsterdam. The building is highly accessible and the idea of incorporating a restaurant to attract the general public onto the premises was very successful in raising awareness of Waag and its many projects, helping to reach out to wider audiences.

Since then, Waag has grown substantially and is now located in two different locations throughout Amsterdam.

The two founders also replicated parts of the MediaLab approach from the Massachusetts Institute for Technology but with a strong focus on involving the local community in projects.

Interestingly, the focus on how society can adapt and embrace the virtual world has changed slightly over time to bringing the virtual world back into the real world (what new technology can do and contribute to solve problems in society).

Waag Society quickly attracted interest from leading designers and artists, which created a snowball effect. There was an excitement about cross-sector working and what the internet could bring to society and the business world. Now, much of Waag’s work is more driven by the social issues and questions around how problems in society can be solved.

Key Achievements and Examples of Activities

The most relevant positive outcomes and impacts for Waag Society are to contribute to tackling societal problems, to facilitate exchange, collaboration, learning, and to create a better world. It understands itself as a research organisation, where outcomes and impacts usually evolve over time. Waag Society works across a substantial range of subject areas.

In its 23 years, Waag Society has experienced significant development and growth, now employing 55 members of staff. In terms of policy impact, a distinct Creative Industries policy was developed by the country for the first time eight years ago and the CI sector was declared as the top sector in the Netherlands – the Waag Society pro-actively contributed to this development.
Waag Society is a project-driven organisation based on science/art/technology and where funding and contract money is coming from (so, there is flexibility in what research topics are being addressed, dependent on those that are able to find funding).

In addition, there are numerous examples presented on the Waag Society website, including:

- **Cities 4 People**: A key concept in this project is **People-Oriented Transport and Mobility (POTM)**, which provides new ways to deliver novel, sustainable, targeted solutions that address the needs of the public. POTM encompasses the blend of new digital and social technologies under an inclusive approach to bring out solutions that have a low ecological footprint, a sharing mentality and the potential to solve real urban and peri-urban mobility issues.

- **Low Cost Prosthesis programme** which developed the technology to produce a 'lower knee' prosthesis in line with open innovation principles, so that end users, designers, researchers and manufacturers could arrive at product innovations by joint effort. The Fablab prosthesis programme has emerged as possible business case for the HONFablab in Jogyakarta, Indonesia.

- **Snoezelen or controlled multisensory stimulation** is used for people with mental disabilities, and involves exposing them to a soothing and stimulating environment. Snoezen rooms are specially designed to deliver stimuli to various senses, using lighting effects, colour, sounds, music, scents, etc. The combination of different materials on a wall may be explored using tactile senses, and the floor may be adjusted to stimulate the sense of balance.

Example of Waag Open Design facility:

The Open Design Lab makes innovation in the make and design industry transparent and accessible for artists, designers, entrepreneurs, and citizens. The heart of this Lab consists of the maker space Fablab Amsterdam, the first Fablab opened in The Netherlands and part of the international network.

The Lab offers room for self-initiated research, and is a place to learn by making, where new relations are formed between people and objects. We facilitate experimental and artistic research in fashion, textiles, architecture, the Internet of Things, robotics, nanotechnology, energy, healthcare and nutrition. We work to make our materials, processes and results sustainable and transparent.

*The Open Design Lab is made possible by a subsidy from the Creative Industries Fund NL.*

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3 Picture and Text Source: https://Waag.org/en/project/snoezel-objects

4 Source: https://Waag.org/en/lab/open-design-lab
How are activities and projects chosen?

Waag rapidly grew and became a magnet and motor for development. It attracted a lot of attention and was/is able to influence policy makers. The importance of ensuring that there is a budget for free/core research was emphasised to stay innovative and inventive.

However, there is also realism about funding. Project ideas need funding and Waag needs to identify which funding programmes are suitable to support which idea with grant funding. The fundability of project ideas is a criteria when the validity and scope of a project idea is being discussed at the outset.

How is cross-sector working achieved?

Working in small multi-disciplinary teams is vital, but there was an emphasis to keep it as small groups. Good local contacts are important to help disseminate ideas, get them to market, etc.

To work at the innovative edge of things requires public sector funding – and an understanding that space must be allowed for new ideas to develop.

Good communication is very important and a good mix of talent within the organisation but also as a principle in all project activity. Every stakeholder needs to stand behind the open innovation principles.

Approach to evaluation and assessing achievements

The qualitative achievements of collaborative working are substantial. Co-creation, co-design and co-production are key terms, but more challenging to narrow down into quantitative outcomes/impacts. Additionally, Waag Society is working a lot at the research side, i.e. pre-pre-market design. It is about creating ideas, such as alternatives to existing services/products which cannot yet directly solve current problems and needs in society. There is a long feed-in time until quantitative outcomes are achievable.

The popularity of Waag Society over the years is taken into account, such as articles and publications made over the years.

Although funding programmes always need to be transparent and have performance indicators to report against, the usefulness of those are – at times - questioned. Measuring economic impact or assessing economic value is considered very difficult in the context of ‘Open Innovation’ where the original idea has potentially led to numerous new ideas across the various partners, at different times and over a longer gestation period. To capture this is perceived as almost impossible.

There is also a belief that the value of Waag Society itself is much higher than can be demonstrated by any monitoring and evaluation framework or impact assessment. The added value of Waag Society activity and research is backed by a strategic understanding and recognition of its value.
Positive outcomes include the number of hits on the Waag Society website, number of downloads of publications on the site, continuous success in developing projects, participating numbers in all aspects of Waag activity. Regarding Waag’s work with schools, achievement is noted when schools are starting to use the curriculum modules produced by Waag Society.

Many of the positive outcomes take time to evolve. In some projects, over years, new products and new services are being developed and spin offs are created (i.e. Fairphone). Other events present the start for participants to develop ideas, and years’ later they develop their own projects or start-up businesses.

Success for Waag Society is defined by staying in the interests of the population, knowledge sharing and contributing to society in a positive way.

What do funders request to be reported?

As Waag Society sources much of its funding from public sector sources and funding programmes, performance indicators are usually an integral part of the project management process. However, the economic impact of using creative people in project design collaborations is very hard to pin down. It is often the process of going through a collaborative project and the learning from it which should be measured. But again, this is difficult.

Success Factors

- Drive, interest, curiosity, communication, creativity, imagination and vision.
- Having a small core multidisciplinary team with a good mix of talents (Creative Industries, science, local businesses) with good local contacts is important. They can develop a small programme with public funding to attract attention and create a platform to translate the ideas into practice.
- Vision and excellent communication skills are very relevant skills to have.
- The first initiatives attracted key people sensing that something new and exciting was being created at Waag Society.
- Developing Open Innovation modules for schools and starting to implement them with the help of local authority (this is just starting now).
- The ability to attract public sector support, influence policy making, and to have 15% of their annual budget ring-fenced for non-contracted, fundamental research to maintain the innovatory edge and research freedom, creating new ideas and developing questions and topics for new project development.
- Equally important is maintaining the independence of Waag Society as a research organisation.
And what about the challenges?

The constant need to find funding (public and private) and keeping in touch and close to policy development is important and needs to be attended to consistently.

The world of online research, development, prototyping and product/service development is changing rapidly. This creates demands to adjust IPR and copyrights, distribution and reproduction processes and legal requirements.

There is a need to have a group of ‘rain makers’ – people who can drive an idea forward, who have the interest and commitment, curiosity, communication and networking skills, creativity, imagination and vision.

Initially, there was no public sector policy to support the work of Waag, it was therefore essential that Waag Society financed itself via private sector contract income. At the beginning this was easier, as the need to find out about the opportunities that the internet offered was huge, so attracting private sector contracts was easier then (today it is still 30%).

In terms of evidencing impact, the main challenge is the qualitative nature of Waag’s core ambition, to change mind-sets. Attributing which partner/participant has contributed what and to what extent is a major challenge in view of the process of ‘open innovation’ being such an interwoven process of bouncing off ideas and sharing ideas on the internet at such a rapid speed and with worldwide reach.

What is recommended?

Quote as many good practice examples as you can. Old models of closed innovation, and isolated business models do not work anymore, modern technology and understanding of the needs in our society have changed radically.

Businesses will always go where the money is – don’t worry about them. Much more success is achieved with focusing on start-up initiatives, graduates, young people who can grasp/have an open mind to operate at different levels, create interrelationships and have a positive attitude and interest in society.

Go for the low hanging fruit – i.e. the easier routes. Don’t start with big companies (heavily into legal issues, aggressive in IPR and often still based on more closed innovation models), small companies, start-ups, researchers, young people are more flexible in their mind-sets and grasp the ideas of ‘open innovation’ more quickly, they are more curious and interested in doing something for society and changing the world for the better.

The mastermind type of scenario is also valid for Waag Society, of which the two founders had the necessary qualities to create something new, to attract interest, to communicate their visions well across a wide range of stakeholders. They could ‘translate’ complex ideas and cross bridges from research to community.

Public sector support is needed to facilitate the process and to invest in idea generation.
Allow sufficient time and scope, i.e. the first idea might not be successful or feasible, but due to the collaboration process a lot of other ideas will have been triggered. The engagement in the Open Innovation process itself usually has a very positive impact on participants.

To address the education curriculum is essential, by teaching young people to think in an Open Innovation manner.

**Future Plans**

Fundamentally, Waag Society understands itself as a cultural organisation, with the aim to become a research institute during 2020.

**Learning Points**

Waag Society is a ‘child’ of the internet and digital technology revolution and was created alongside a huge demand for know-how and development in this field. It is difficult to reproduce similar environments, particularly as the private sector was a strong paying customer during the start-up years, driven by the vast need for information and know how in internet presence and trade. But there is certainly a lot what can be learned from Waag Society alone by looking through its website and the diversity and wide range of projects it engages in.

It is also interesting to see that the organisation recognises the need for their ‘own’ research and generation of ideas to keep up to date and at the forefront of development. 15% of their overall budget is ring-fenced for blue sky thinking and pure research.

**What is at the core of the initiative?**

There is a strong belief that senior staff at Waag Society believe in the idea of Open Innovation, before they believe in earning a lot of money. There is a conviction about doing something positive for society and being rewarded by the important and central status they enjoy in ‘facilitating’ knowledge and vision. To be at the cutting edge of research and innovation in a cultural, socially conscious fashion brings them core job satisfaction. There is some altruism and passion involved, as well as wanting to be part of exciting developments and processes.
2. ARS Electronica FutureLab

ARS Electronica is a publicly funded organisation seeking to create links between art, technologies and society (income from private commissions has increased considerably over the years).

ARS Electronica was founded in 1979 as a Festival to address questions of the future. The Festival sought to bring art, culture, science and education to the people of Linz, and further afield, through exhibitions, concerts, and installations. Following on from this, ARS Electronica developed an awards ceremony identifying organisations at the forefront of technology advancements – Prix ARS. The first winner of Prix ARS was Pixar, and subsequent winners include Wikipedia and Wikileaks.

ARS Electronica then developed a ‘museum of the future’. Again this was to showcase emerging technologies and how they can be utilised for societal benefit.

The final piece to the jigsaw was the development of an in-house R&D facility – named ARS Electronica FutureLab in 1996.
ARS Electronica, as a concept (multi-disciplinary approach), was developed by three individuals described by the consultee as driven, passionate, forward thinking, creative, and open to taking chances in order to achieve innovation.

The remainder of this case study focuses on ARS Electronica FutureLab – referred to as FutureLab.

Rationale

FutureLab was originally designed as an in-house R&D facility to develop the content for the Festival and Museum. The key purpose of FutureLab was to conceptualise the intangible, supporting exhibitions, visualisation and stage-based media art.

As the Museum was designed to be a ‘museum of the future’ it was intended the content would be developed and renewed every six months to remain ahead of emerging technologies.

The key aim of ARS Electronica is to bring innovation to the wider community for the benefit of society.

Description of Activity

FutureLab has become the R&D arm of ARS Electronica working closely with all strands of activity pursued by the organisation.

FutureLab categorises activity within broad topics including: empowerment, art and science, novel cultural experiences, reframing communication, inventing tomorrow, and encouragement. FutureLab’s staff is comprised of researchers from a range of disciplines including 12 artists in residence, architecture, design, interactive exhibitions, virtual reality and real-time graphics.

Evidence, in terms of number of projects and income generated, is presented in published annual reports, including case studies of project examples. The website is a further source of evidencing activity. Private sector clients are considered as project partners and own the results of the research.
Projects are undertaken either in isolation i.e. within FutureLab, or in partnership with the private sector. Activities are not restricted to specific sectors, instead operating across multiple sectors such as Sport and Leisure, Car Manufacturing, and many more.

In recent years, FutureLab has increased its partnership working with the private sector including companies such as SAP, Daimler, Intel, BASF and Primetals Technologies.

**Distinct Phases of Development and/or Implementation**

The four activity areas of ARS Electronica (ARS Electronica Centre, Festival Ars Electronica, PrixARS Electronica, and ARS Electronica FutureLab) grew in stages. Founded in 1979 the organisation started as an arts, technology and scientific festival focusing on questions of the future. In 1996, FutureLab was created to have a supportive role on developing the content for the ARS Festival and the Science Museum. However, it quickly became evident that it had the potential to do much more and developed in the R&D motor of the organisation. Being one of four pillars allowed for effective cross-fertilisation and inspiration.

Its key aim always was to connect art, technology, science and society and through its inter-active applications, utilisation of virtual reality, digital networks and state-of-the-art media this proved most attractive to an ever larger number and range of audiences.

The more projects and collaborations FutureLab has undertaken the more new partners have been inspired and attracted to new projects (50 projects in eight countries in 2015).

Interdisciplinary R&D projects in partnership with private sector organisations also increased over the years attracting large corporate companies to commission multi-disciplinary research and development.

Every 3-5 years FutureLab entirely restructures in order to remain at the forefront of emerging technologies and advancements.

**Most Effective Projects**

The FutureLab is the R&D motor of ARS Electronica, an artistic-scientific think tank. Its projects are oriented at future needs of society and produce prototypes, sketches and reflections of ideas.

FutureLab lists 120 exemplary projects on its website (more information available [here](https://nowalls.qut.edu.au/qut-ars-electronica-futurelab-academy/)). All projects, even those not listed on the website are viewed as essential learning opportunities.
Exemplar projects include:

- A four year research project with an international German car manufacturing company researching concept cars i.e. driverless cars. Consultees viewed the project as being particularly successful as FutureLab convinced the company to showcase the new car design directly to potential customers and residents in the city of Linz as opposed to normal protocol of showcasing new designs to a smaller professional audience of PR and advertisement companies in Germany. The showcasing event was very successful and drew attention from other international car manufacturers. Since this project, other car manufacturers have also approached FutureLab to undertake similar R&D assignments.

- The development of a spin out company owned by ARS Electronica. The company – named Spaxels Ltd – brought together aviation with computer graphics to create 3D objects from drone technology. Spaxels Ltd has caught the attention of a range of organisations throughout the world, including a Japanese telecommunications company that is now engaging with ARS Electronica Japan.

Success Factors

- Activity within FutureLab is not restricted to certain sectors and there is an open approach to idea generation whereby staff are encouraged to explore topics, techniques and approaches.

- There is no ‘right’ or ‘wrong’ way - incidents where no solution is found are seen as learning opportunities.

- Interdisciplinary working is embedded within the organisation’s remit. FutureLab’s 35 staff members have varied backgrounds including the arts, sciences, engineering etc.

- Public engagement and showcasing of research findings to the wider public provides an important test ground, provoking feedback and connectivity to the community.

- Continuously building and development partnerships (industry partners own and fund their projects).

- In the pursuit of ‘understanding the language used in different sectors’ and to learn how to work in a truly collaborative manner, FutureLab re-teaches participants in collaborative and R&D working. Here it is important to overcome expectations of
conventional approaches and to develop a mind-set which frees ideas from being restricted to certain disciplines, to focus on the question with an entirely open and inquisitive mind, developing a new creative vision.

Another important factor is ensuring the organisation is flexible to respond to changing environments. This is twofold, with an organisation of this type needing to:

- Ensure the organisation is of a manageable size. A few years ago FutureLab employed 70 staff, this was deemed too large to remain flexible and adjustable to changes and to remain focused at the forefront of technology (now they have 35 staff); and
- Ensure an appropriate structure is in place to change the focus of projects swiftly if they run into a cul-de-sac.

**Future Plans**

FutureLab has recently developed ARS Electronica Japan, an R&D facility based in Linz which interacts solely with Japanese companies. It is currently working with large national Japanese companies bringing together the private sector directly with its customers. The longer term aim for ARS Electronica Japan is to locate the activity in Japan.

ARS Electronica FutureLab is also in discussions with Australia to determine if the model can be employed there.

FutureLab was positive that the R&D collaboration model could be transferred to Scotland. However, it was considered crucial to ensure any model employed is embedded within the Scottish culture and is addressing the needs of the Scottish society.

**Learning Points**

- Working in close collaboration with other initiatives such as a Science Museum, an art-science Festival and such like provides a suitable environment for cross-fertilisation and growth;
- An employed multi-disciplined research team has its benefits in consistency and building a strong track record attracting private sector clients (at the same time remain open to include external partners and participants if and when required);
- The multi-disciplinary approach needs to be learned to ‘think out of the box’ and to learn how to listen and communicate across disciplines;
- Smaller project teams remain more flexible yet need to be re-structured after a while to remain open minded; and
- Substantial levels of private sector income can be generated.
3. Laboratorio Para La Ciudad

Key Facts

<table>
<thead>
<tr>
<th>Location:</th>
<th>Mexico City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established:</td>
<td>2013</td>
</tr>
<tr>
<td>Lead Organisation:</td>
<td>City Government</td>
</tr>
<tr>
<td>Number of Employees:</td>
<td>20</td>
</tr>
<tr>
<td>Annual average budget for projects is:</td>
<td>260,400 USD</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://labcd.mx/labforthecity/">http://labcd.mx/labforthecity/</a></td>
</tr>
</tbody>
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Main Funders: Public Sector

Type of Collaboration: Public sector, citizens, academia

Beneficiaries: Society

Summary of the organisation and its range of activities

The Laboratorio para la Ciudad (Laboratory for the City) is Mexico City’s experimental office for civic innovation and urban creativity, the first city government department of its kind in Latin America. The Laboratorio is promoted as a space for rethinking, re-imagining, and reinventing the way citizens and government can work together towards a more open, more liveable and more imaginative city.

The Laboratorio employs 20 staff to implement collaborative approaches aimed at delivering better services and offering new channels for engagement. Activities are designed to envisage how the role of government can change so that it can contribute more effectively to building better cities.  

The Laboratorio works across five different topics around which teams are built (architecture, playful city, creative city, pedestrian mobility, participatory budgeting).

Key objectives are:

- To create a cultural change towards finding pioneering solutions to city problems;

- To facilitate social development;

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- To create new models of development which are better for the planet; and
- To be a Think Tank for the local government in the area of citizen participation.

**Main Rationale**

The underlying rationale is: what does democracy mean, how can governance structure support a democratic system and focus better on the ‘collective good’?

There is a clear focus on practical research utilising the urban and creative skillsets and to address issues that matter to citizens.

The application of a cross-sector and collaborative approach is key to finding solutions. Fostering creativity is a key principle of the initiative.

Laboratorio believes in investing in people before investing in infrastructure, creating tools but also spaces for interaction, developing ideas and promoting innovative policy and best practices.

**Development and Implementation of Cross-Sector Approaches**

The aim of the project is to further interaction between citizens and the government…to think about the city together, to build a city that stimulates imagination, a creative city.

This is achieved through creating an experimental area within the city government that provides space to reimagine the way government and civil society collaborate, by implementing public policy and projects that promote citizen ingenuity and talent.

The project is designed to find innovative responses to the massive city growth rate which will bring radical environmental, technological, social and cultural transformations that affect our everyday lives. Therefore new solutions need to be found.

The project is the first city government department of its kind in Latin America.

The Laboratorio is perched on a 3,000-square foot green rooftop, or azotea. The Azotea is not only the Lab’s workspace, but also a space for new ideas and projects, for meetings and ‘provocations’ (see below).

Here, though Sesiones de Azotea, they invite both local and international guests to host a range of encounters, from round tables to barbecues, from lightning sessions and ephemeral interventions to film projections and book presentations.

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On the rooftop of Laboratorio para la Ciudad in Mexico City, Mexico
Source: https://medium.com/@kolivernyc/think-global-act-local-136360e1f2ec
The Lab is a space for rethinking, reimagining, and reinventing the way citizens and government can work together towards a more open, more livable and more imaginative city.

**What is at the core of the initiative?**

At the heart of the approach is to create dialogues and ignite controversies, to build bridges between government, individuals and creative communities and to create a cultural atmosphere and open appreciation of collaboration and new ideas.

**Institutional Framework and Governance**

The Mexican government funds the initiative, with contributions from the private sector such the Omidyar Network and the Hewlett Foundation, that specialise in investing in civic tech and social innovation projects.

**How it all started**

As part of the election campaign, the Major invited two experts to bring forward ideas regarding citizen participation. The idea of an Experimental Think Tank for local government was informed by similar initiatives around the world, such as Mindlab in Denmark.

**Key Stages of the Approach**

The Laboratorio works in a flexible and open manner seeking to engage widely promoting closer relationships between the civil servants, experts and citizens.

There are a number of key tools used which characterise the Laboratorio and its approach to collaboration:

**Provocations**: At the core of the project are the ‘provocations’, an approach from a question to an innovative action:  

A provocation – a definition or a question (about an important issue in the city) which provokes collaboration and a starting point for a conversation leading to discussions and reflections, new questions, and actions. The provocations are always inclusive and open, with some ending up as priorities and experiments for the Lab and others

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finding their way to other relevant departments to be addressed further.

A provocation is only the starting point and it is a big challenge to transform these provocations in open conversations, active community building, successful experiments, innovative and creative methodologies; changing tools that facilitate rethinking and reinventing the city.

**Experiments:** Whilst acknowledging that only 50% of Mexico City citizens have access to digital technology, the Lab seeks to use digital technology to bring about innovative solutions.

Through a number of civic innovation experiments, they want to push innovation in the public sector, helping government create and implement new mechanisms for citizen participation, collecting citizen inputs, generating useful and accessible data and also offering spaces for dialogue, debate, and citizen engagement and encouraging citizen entrepreneurship.

**Projects:** The urban creativity projects allow people to see their city (and their place in the city) with new eyes. The aim is to generate ideas in public, highlighting great projects and talented people, and also bringing other experiences from around the world to the table. Creativity is a key factor to spark conversations and collaborations.

Other projects focus on improving access to city data, hackathons, projects improving safety, sculptures, an international residence programme, urban markets, new ways of partnering with the private sector, and festivals.

Collaboration is key for the Laboratorio. There is a strong believe that only through more ingenious collaborations will cities have access to the newest ideas. The Laboratorio is constantly seeking new proposals and provocations around the problems and opportunities of the city, both within government and through civil society.

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**What makes the approach unique?**

The aim of the initiative is to attract an urban and creative skillset, which is prevalent amongst young people, therefore the average age of the Laboratorio staff is relatively young. Considering that the salaries are not high, staff often use their position at the Laboratorio as a platform to further their careers or form part of their doctorates. The recruitment process does not specifically select young people, but is driven by who applies for the positions and who is interested in working in this way, which has mainly been young people.

There is a lot of interest from young people in the 'common good' initiatives – these topics create a different, very positive energy and high levels of participation (1,000 participants at a data festival, or 700 people applying for positions).

There is a distinct interest and ethos of the younger generation to search for a new development / business model, one which is better for the world/environment.

While focus in determining project themes is applied, there is a considerable amount of freedom given to the project teams to collaborate widely.
How are activities and projects chosen?

The first initiatives of the Laboratorio followed an ‘Open Ideas’ approach which involved large audiences considering a large number of ideas. However, this was a difficult process to manage and there is now a mechanism in place to pre-select topics before they are opened to a wider audience. This mechanism involves focus groups between the staff team, civil servants and experts. ‘Mapping tables’ are used to narrow down the specific issues and potential range of projects before a wider audience is invited – this makes the process more manageable and focused. For example, there are conversations between different universities and the Mayor/Laboratorio which resulted in a number of agreements to develop a range of themes (e.g. water pollution, obesity, and corruption) with Open Innovation principles in mind.

As such, it is important to have a strong conceptual framework that clarifies underlying assumptions and objectives.

How is cross-sector working achieved?

At the core is the 20 staff members who represent a multidisciplinary team, mostly without prior government experience, including architects, technologists, editors, art historians, political scientists, journalists, urban planners, filmmakers, sociologists, designers, and urban psychologists.

The Laboratorio is divided into five thematic teams. Each team works in their own field with considerable freedom and flexibility. For example, experts are hired from the public and private sector to accompany particular projects (or to take up residencies at the Laboratorio) according to need and requirements of the particular topic, in addition, local organisations are invited to co-operate. There is a keen interest to involve civil servants across the various departments to join the topics so that they can be motivated to deal with changes and risks in bringing about new developments and creative coping strategies. This is regarded as a positive approach which supports people to improve their jobs and at the same time enables the teams to have access to public data and information held at local authority level. There is a lot of cross-over between the five themes.

Data sources and surveys are used to establish an initial oversight of particular problems with public services. These are then further researched and debated with public officials to find new ways to address and resolve them.8

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8 Project: Maker Library – a creative space to connect with each other and exchange thoughts, resources and develop ideas between all stakeholders and citizens.

The staff teams place staff in different government departments and work with volunteers, thereby bringing civil servants in to direct contact with citizens – this helps develop a better understanding for both sides and develops trust (Laboratorio staff thereby act as a mediator).

Public debates, workshops, conferences, talks, exhibitions are then the arena for facilitated public debate and input.

**Approach to evaluation and assessing achievements**

The Laboratorio has developed a Theory of Change model for its operations, specifying the overall objectives, project activities and expected outcomes of the initiative.

The way in which the Laboratorio measures its performance is primarily based on activity indicators, including the number of visitors and attendance at workshops, conferences, etc. Outcomes are also reported, particularly regarding the number of initiatives set up and enterprises created.

While not a particular focus of the Laboratorio, the success of one specific project (a new Taxi system) has also been substantially successful in economic terms. Studies have been conducted to assess the economic impact of this initiative, which is used as a flagship example to demonstrate what can be achieved through collaborative engagement.

Although the Laboratorio understands itself as a social development initiative, the good economic impact created by some of its spin-out enterprises is seen as a welcome benefit of the project, but it is not a key objective of the overall initiative. This flagship success is useful for responding to criticism of money being spent on experimentation.

For measuring change in behaviour and attitudes (at organisational as well as citizen level), qualitative reporting and assessment is undertaken. Here, the gathering of feedback from users/participants/citizens is important. Qualitative impact assessment is also undertaken for each project, focusing on the cultural components and the creation of ‘common good’. Case studies and reporting of projects on the project’s website is regularly undertaken as part of the Laboratorio’s remit to continuously engage and inspire relevant stakeholders.

**What do funders request to be reported?**

The initiative is funded by the local authority – as this was a specific interest pursued by the mayor when he came into power in 2013. He takes an active interest in the collaborative approach. Therefore, the profile of the Laboratorio is high and it is important to promote and report on the website what is being achieved over the years.

The development of Theory of Change models and the reporting of case studies and progress are all used to inform funders of progress and achievements.
Success Factors

• Work with people who are already convinced by the concept and share the same belief system regarding the potential of collaborative approaches, human-focused development and the importance of the creative process.

• You need good ideas, good people and support from the Mayor is key (especially as the initiative relies on a cross-cutting operation – different local authority departments have to co-operate and because of the Mayor’s support each department is happy and ready to collaborate).

• There is a lot of interest in participating in the common/collective good concept – a different energy comes with this driven by young professionals/graduates/students.

• The ethos of the young generation: to come up with a new model which is better for the planet. New business models are needed.

• Despite focusing on solutions to societal problems, some projects can be extremely successful economically (Taxi project).

• Ability to articulate the original idea into a practical project.

• Knowing how to shift politics, how to get influence – this requires a strategy and the support at senior level.

Some of the challenges experienced:

Justification needed to be produced for critiques regarding the money spent on experimentation. But the scale of the successful taxi project covers all budget used (but this was a lucky coincidence)

Critique that the Laboratorio focuses on young and rich peoples’ problems – this feedback was taken seriously and the lab started focusing on a wider range of problems. The issue with a focus on young people is of participant self-selection, as most people who apply for positions and involvement are young. The mind-set of working in this way is a young person’s mind-set.

Don’t lose focus on the original aspirations and rationales.

Future Plans

There is interest in developing a ‘Future Thinking’ group at the Laboratorio. In addition, there is an ambition to increase collaboration with other cities around the world, including London, Paris, etc. to jointly look at a more global-agenda. This international strand is part of the Laboratorio’s mandate.
# Learning Points

- Work with people that are already convinced of the common good approach and who share the same believe systems;
- Keep stakeholders close, involved and informed (i.e. the city and its social programmes; activists in society to help reach and input, and universities);
- Across the five themes, the round tables are very different regarding the composition of invited guests and participants;
- Keep an open approach, a lot of different kinds of projects arise, such as addressing obesity, corruption, water pollution, etc.;
- Nurturing relationships is time intensive, but very important;
- Manage expectations – be clear what the lab is doing and what not;
- Incorporate feedback mechanisms and take feedback seriously; and
- To start with large events with an ‘open ideas’ approach was too much and too difficult to manoeuvre. It is better to start with a selection process of the most viable ideas first. Appropriate mechanisms have been developed to narrow down ideas (focus groups, defining strategies).
4. New Factory, Tampere

Summary of the organisation and its range of activities

The New Factory is located in the city of Tampere, representing a novel innovation environment that provides students, self-employed entrepreneurs, researchers and developers with an environment for open innovation, allowing them to process ideas into prototypes, pilot projects, products, services and social innovations, new businesses and new jobs.

Seeds of project ideas can come from businesses, public organisations, students, researchers or local residents. Businesses in the Tampere region supply the Factory with coaching and financing and in return, the New Factory offers enterprises new talent, business ideas and concepts\(^9\).

The focus is on business sector needs and bringing multi-disciplinary student teams together to find solutions for problems. The New Factory deals with 67-70 projects each year. Within

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\(^9\) Source: http://transitionproject.eu/new-factory-finland/
each project, the multidisciplinary student team represents a mix of academic fields, such as technology, business, art and creative industries – a good mix is very important.

If the student team develops a feasible idea, businesses can licence the solution, thereby creating an income stream for the New Factory.

**Main Rationale**

The New Factory was developed to contribute to the renewal of the economy of Tampere and to provide an open innovation platform facilitating cross-sectoral co-operation and innovation.

The main focus is on providing an environment for a customer-driven and customer-oriented product and service development and to promote the concept that multi-disciplinary working leads to better innovative solutions.

**Development and Implementation of Cross-Sector Approaches**

**How it all started**

The New Factory evolved from the Creative Tampere Programme (2006-2011) that addressed economic structural change in the Tampere region. The creative industries were identified as one of the key industries to regenerate the region. The programme included 126 projects focusing on the Creative Industries, social innovation, arts, new technologies etc. The New Factory support economic development in the Creative Industries.

Instrumental for the successful set up of the New Factory was the Nokia Research Centre that initiated university engagement and provided a long list of project ideas, which formed the first tranche of projects for multi-disciplinary student teams.

**Institutional Framework and Governance**

The institutional framework of the New Factory is based on a partnership of a number of regional and local organisations that are also funders of the initiative. They include:

City of Tampere, Tampere Region, Tampere University of Technology, University of Tampere, Tampere University of Applied Sciences, Tampere Chamber of Commerce, Tampere Region Economic Development Agency, Centre of Expertise Programme, Centre for Economic Development, Transport and Environment of Pirkanmaa.

The partners have distinct roles and responsibilities, whereby:
The three local universities pro-actively promote the opportunities and source students for participation. They also accredit students for participation, and provide research lab facilities.

In addition to providing financial support, the City of Tampere promotes the New Factory through its contacts and networks, and offers creditability and strategic support to the New Factory.

Engaged private companies are committed to meet study teams regularly and agree to buy licences if the solution is feasible (in 59% of projects, the licences are bought).

The New Factory/Demola team (13) is responsible for the day to day running of the New Factory, including the initiation of contact with companies; co-ordination of the whole process of idea generation, organising student teams, facilitating collaboration; training students in collaborative working; providing meeting space and supporting the project teams.

Since its start in 2008, some partner organisations have been lost as the process is a risk-taking environment and funders need to acknowledge and be comfortable with this uncertainty.

Key Development Phases

The idea of developing the New Factory was supported by the findings of a feasibility study commissioned by the City of Tampere. This led to the creation of a consortium of a number of core members which were keen to make a success of the initiative. This core team was essential to see the New Factory through its first years. In addition, the support from a large business such as Nokia was vital to gain the necessary credibility and business support for the whole idea, which was significant.

The City of Tampere identified available premises and the New Factory commenced its activities in a converted industrial building. The building provides space and a focus for the projects to meet on an off-campus location. The current building provides dedicated space for the multi-disciplinary student teams. The space is accessible to the teams at all times and this is perceived as important. There is debate about bringing the Factory on campus, but this may be controversial as there are three different university partners.
Key Achievements and Examples of Activities

Since its beginning in 2008, the New Factory has dealt with 500 projects. In 59% of projects, the participating business has bought the license for the developed product/service/IP etc.

Initially, it is challenging to find SMEs willing to engage, but eventually a snowball effect starts to take shape where word-of-mouth promotion and repeat customers scale up the initiative. In nine years in Tampere, 500 cases were handled. The aim by 2020 is to have 200 projects per year.

The New Factory implements what has become the ‘Demola model’ (see Demola International case study). The Demola model requires that the project ideas originate from the private sector. The initiative runs on a time schedule with each project engagement lasting 3-4 months.

The process is structured and has its various phases:

- Companies are contacted to gather project ideas and achieve their buy-in to participate in the initiative. This is organised through ‘Calls for Projects’ campaigns and promoted through a wide range of avenues, including students’ parents, old team/student members now working in companies, and other businesses promoted through networks of partner organisations. A particular challenge here is to track addresses of previous students, who could promote the initiative to their employers.

- Each project idea is vetted and developed to some extent to assess its feasibility and attractiveness to be included in the multi-disciplinary approach. This process takes time and involves the New Factory team working more closely with the companies. The most viable project ideas are chosen.

- This is followed by a two week intensive on-campus promotion campaign to attract students to the project ideas. This involves inter-university co-operation to source students effectively. Sourcing students can be challenging, particularly in some fields that are most demanding to students (health sector). What helps is that participation in the initiative gives students credit points which they need for graduation.

- The promotion campaign is followed by a big event bringing all interested students together (on average 140). This event needs to be well-facilitated, particularly if there are more unusual project topics presented so that each project idea can be allocated a balanced multi-disciplinary project team.

- After the project teams have been set, the team meets with the companies on a fortnightly basis throughout the project (usually there are no company placements).

- In addition, the New Factory staff teaches the teams and companies how to work in a collaborative manner.

- After 3-4 months, the study team presents their findings to the companies, who then decide if they want to licence the results of the project.
Making projects interesting helps attract a diverse range of students to participate. Sourcing students can be difficult at times particularly in health-tech topics. There are also some faculties, where students rarely come forward, for example medicine. The team needs to be very proactive in the promotion phase of the projects.

How are activities and projects chosen?

The New Factory team and the partner organisations will initiate contact and attract companies to take up the offer of multi-disciplinary student teams helping to solve their problems. To some extent, the initial process of a new campaign might be steered by more strategic considerations, such as selecting certain sectors, such as energy. However, as a principle of the approach nothing should be forced or pushed as a project other than by the company. The companies need to have the idea on their ‘bucket list’.

To develop new projects, needs dedicated effort and time and careful planning. Working with the companies takes time to make projects feasible and interesting for the promotion campaign. But the engagement process alone brings fresh ideas.

How is cross-sector working achieved?

The companies who choose to participate in the project need to be committed to it and available for two-weekly meetings with the study teams etc. However, the openness of the multi-disciplinary, cross-sector process and the concept are difficult to handle as everyone first needs to learn how to listen and collaborate with a quite different people. This is not easy, particularly across different disciplines.

Arranging the multi-dimensional study teams is key to the success, but also a challenge.

The learning of how to have an open mind, communicate with other disciplines, be an active and effective member of a collaborative study team, and work together effectively has to be learned. This cannot be taken as a given and the New Factory staff allocate time to facilitate this learning.

The project teams usually form mini companies and decide their various roles necessary to accomplish the task. The decision on who is project manager needs to be worked out by the project teams themselves (from experience this is advisable).
Approach to evaluation and assessing achievements

Monitoring and evaluation is primarily activity-based, but includes monitoring the income generated from sold licences. Common indicators are:

- Number of projects
- Number of students involved
- Number of licences bought
- Percentage of completed projects licensed by project partner

Not all projects succeed, but 59% sell their product in the form of licences to the participating company, and there are surprising results which can come out of the process.

At times, on the basis of the project findings, student spin out companies are created – although usually not including the whole project team.

In most cases, even if projects have not succeeded in selling a licence, there is positive learning to be drawn from.

In addition to the above indicators, annual reports present findings in narrative form, detailing each campaign and results.

A number of reviews have been undertaken (for example: The City of Tampere – European Creative Industry Alliance)

What do funders request to be reported?

The challenge is to demonstrate how students' capabilities to think multi-dimensional and creatively has changed and what impact this has on their future and for their future employers. This is perceived as very difficult to demonstrate in any quantitative manner, but it is certainly accomplished. In addition, returning companies and previous students who come back with ideas on behalf of their new companies also count towards positive outcomes.

Success Factors

- There was a keen interest at the local authority level to initiate something for the future to help regeneration efforts. The ongoing support – financially and operationally is essential for the ongoing success and reputation of the New Factory.
- The support from a big company helped a lot in terms of credibility when finding other partners for the project. In addition, Nokia had a long list of project topics for the early years of the initiative to gain experience and credibility to attract businesses.
- It was essential for the first years to have had a core of committed partners.
- It is an important attraction, particularly for smaller companies, that there is no money involved to have their ideas/problems looked at by the study team. However it
Future Plans

Through being part of the Demola International network, an international angle has been developed, and in future this could benefit projects developing across different geographies.

The aim for 2020 is to have 200 projects per year.

Learning Points

- The importance of a strong core team of partner organisations, ideally with a large company supporting the initiative.
- The relevance of allocating dedicated resources into learning how to work in a collaborative manner.
- To have a physical location as a focal meeting location off-campus.
5. DesignLab – University of Twente

Key Facts

- **Location**: Twente, Netherlands
- **Established**: 2015
- **Lead Organisation**: University of Twente
- **Number of Employees**: 6 (plus a team of students)
- **Annual Budget (2016)**: €1.3m
- **Main Funders**: university, but also external funding sources from businesses and organisations.
- **Website**: [https://www.utwente.nl/en/designlab/](https://www.utwente.nl/en/designlab/)

Summary of the organisation and its range of activities

The DesignLab is a creative and cross-disciplinary facility at the University of Twente, connecting science and society through design. The DesignLab offers a variety of bespoke designed spaces for staff and students from all academic fields to work together with companies and governments. The aim is to implement and develop scientific and technological insights that can be used in finding and shaping creative, innovative and meaningful solutions for complex societal challenges. There is a focus on connecting engineering, natural science, social science and the humanities and by using their creativity to help solve some of societies’ problems.

The DesignLab’s approach is based on a particular engagement model called: Science 2 Design 4 Society (S2D4S). The model is taught to those engaging with the DesignLab and all activities are required to adhere to this model. There is also continuous research undertaken on the model itself. As long as the mindset of S2D4S is met, the DesignLab is flexible and accommodates a lot of different project ideas from researchers, students, businesses, and public sector organisations.
Main Rationale

The DesignLab aims to facilitate and encourage co-operation with companies, social organisations, faculties and students. It assists as a centre of expertise by stimulating creativity and an entrepreneurial mind-set to address society’s problems.

The DesignLab research is focused on the ‘research of design, for design, and through design’ and guided by its bespoke model of collaboration leading to innovation.

Development and Implementation of Cross-Sector Approaches

The DesignLab represents a platform for multidisciplinary co-operation, innovation, and creativity by providing a bespoke infrastructure for research and education centred on multidisciplinary research and design.

For those willing to work in a multi-disciplinary and creative manner, the facility offers a range of spaces and a bespoke environment to meet, interact, generate ideas, design, build and test prototypes.

‘Translating science to society’ is a core theme of the DesignLab and there are a number of multi-disciplinary study and degree programmes focussing on connecting science and technology to societal challenges through design.

The applied method of Science 2 Design 4 Society uses the principles of ‘reframing’ and ‘disruptive’ innovation.

How it all started

The DesignLab was created in 2015 to build directly on the University of Twente’s core image of being the University with the ‘High Tech Human Touch’.

In this context, the University understands itself as a frontrunner in socially-relevant technological developments, drawing on its engineering, technical and social science faculties. There is a strong focus on design which brings science and society together.

The DesignLab was created to provide a dedicated space for collaboration and to facilitate the multi-disciplinary approach between the university faculties and departments, and to reach out to meet with private and public sector partners interested in collaborating.
Institutional Framework and Governance

The day to day affairs of the DesignLab are organised by a team of multidisciplinary students from the University of Twente (tasks include running the information desk, assisting projects and helping individuals at the DesignLab).

The international student team is multidisciplinary, combining students from Creative Technology, Industrial Design Engineering, Human Media Interaction, Mechanical Engineering, Psychology and more.

A Board of six University staff with scientific/academic and other backgrounds manages the DesignLab consisting of:

- Managing Director
- Director
- 2 Co-Directors
- Project Manager
- Postdoc Researcher, working on the particular research method which underlies all DesignLab activities (Science 2 Design 4 Society)

An Advisory Board looks over, advises and supports the DesignLab Management Team.

Key Development Phases

Over the first two years, the DesignLab has been setting up its structure, and focused on its internal, multi-disciplinary educational programmes. After two years, the team is starting to design a strategy to reach out to external companies and organisations, to reach the right customers, and governmental departments and to ensure that they are aware of the DesignLab.

The DesignLab is structured into four key topic areas:

- **Education**: the DesignLab is a place for students to absorb knowledge, exchange information, generate ideas, detail on designs and materialise visions, by building prototypes. Beside the lectures for both bachelor and masters programmes, students can join various talks and brainstorming sessions from researchers and businesses. An open door attitude is promoted by the Lab enabling students to explore the Lab's activities.

- **Research**: the DesignLab offers a platform for researchers with design-based questions who wish to cooperate and translate science through design to society on a multidisciplinary level. The plan is to support researchers in finding businesses and organisations to collaborate with.
• **Business:** Businesses (and external organisations such as the public sector) can engage with the DesignLab in four different ways:
  
  o **Ideation Sessions:** So-called “pressure cooker” ideas are developed with a group of students around a concrete question, that requires cooperation;
  
  o **Workshops:** With a multidisciplinary team of scientists and students, a concrete problem of the business or organisation is tackled. The workshops bring together technical and social-scientific knowledge to find creative solutions;
  
  o **Student Projects:** Businesses/organisations can assign graduation projects or assignments. Student-driven projects are also welcome in the DesignLab. Examples of this kind of projects are the Solar Team, and the RoboTeam
  
  o **Public-Private Collaboration:** Externally financed promotion trails or postdoc projects and joint research requests. The DesignLab functions as a central point for externally financed PhD, PDEng or postdoc researchers as long as they comply with the S2D4 model.

• **Events:** The DesignLab has exhibition and meeting spaces to accommodate events that are promoted on the website.

**Key Achievements and Examples of Activities**

The DesignLab has already been successful in accommodating a number of multi-disciplinary courses and educational modules offered in the DesignLab that have stimulated students and developed their skills in prototyping their ideas. The DesignLab hosts courses like: 'Integrative Design of Biomedical Products', 'Design of Robotic Systems', 'Philosophy of Technology', 'Design and Emotion'.

In addition to individual courses, there are also entire programs that make use of the DesignLab spaces: including the 'Design Honours Programme' and 'HTHT' module (facilitating access to scientists and technicians).

To maximise interaction between multiple disciplines at the University and to promote creativity, DesignLab has teamed up with the faculty of Behavioural, Management and Social Sciences and has launched a programme called Tech4People. The programme is to strengthen the link between social and technical sciences.

A further example is research about the mediating role of social media technology and its influence on the development of inter-personal relations in society, which can be utilised as the background study for design activities.

Research that is undertaken in the DesignLab directly or
indirectly contributes to furthering the development of the DesignLab method (R2D4S).

**How are activities and projects chosen?**

A portfolio of projects is put together to facilitate the discussions and identify an agenda.

Scientific results can be obtained by analysing the design process itself. An example is the research on the question: Which design techniques could be used by international industrial teams to enhance creativity?

**How is cross-sector working achieved?**

At the core of the multi-disciplinary approach is the “Science 2 Design 4 Society” model which constitutes the central point of research activity in DesignLab. All projects need to subscribe to this model.

Staff (including the students working at the DesignLab) facilitate the process and help bring together a multi-disciplinary team seeking a good balance of researchers from different faculties, disciplines and institutes.

Dedicated international teaching and research teams create an atmosphere where cutting-edge nano-, bio-, robo-, cogno- and info-technology are confronted with social sciences and humanities, through real world design challenges.

Source: https://www.utwente.nl/en/designlab
Approach to evaluation and assessing achievements

In terms of assessing achievement, one of the key interests of DesignLab is to be utilised, its spaces booked, its courses taken up by students and researchers. At the University of Twente, staff and students have a keen interest in collaborative work. It is a playful and creative approach, and the DesignLab provides a save space for these interactions.

Assessing the effectiveness of the approach is more challenging. There is usually no difficulty with getting participants to come outside of their comfort zone while at the DesignLab: “It’s easy to do something new or different for a given time”. However, how to bring about sustained collaborative working is still considered a challenge, including its monitoring or measurement.

Until now, the DesignLab has mainly been a facility for cross-faculty projects, education programmes and public events. Evaluation and assessment of achievements are primarily undertaken via measuring activity levels, space taken up/booked, people attending events and lectures, etc.

It is too early to report on the engagement of the business community.

What makes the approach unique?

One of the essential features of the DesignLab working space is the open attitude of people and their willingness to help and enthusiasm towards multi-disciplinary approaches. The student team that attends to the day to day running of the DesignLab, called ‘The Dream Team’, is a mix of students from different disciplines (and countries), supporting participants in their projects. This is also facilitated by Project Forms put up on an information board, which help participants inform others, to find partners, or links to other projects.

To communicate what is going on is crucial, although can be challenging as the range of activity is so diverse. To focus on communication and reaching a larger client base, the DesignLab has now taken on external expertise.

Success Factors

The DesignLab is able to draw on 3,000 researchers at the University who are already committed to collaborative working, with this being the University’s principal approach: the “High Tech Human Touch”.

The buy-in of students and researchers in looking beyond the boundaries of their own subject area and to establish links between different disciplines is high.

The University is an entrepreneurial university, and students can use the DesignLab for this purpose, with both labs being used heavily.
Future Plans

At this stage, the plans for the immediate future concern reaching out and implementing a strategy for reaching companies for multi-disciplinary projects.

Learning Points

Cross-sector, multi-disciplinary collaboration needs to be taught to people and this process needs to be facilitated carefully. The DesignLab has developed its own approach which is followed by all projects.

The day to day running of the DesignLab is done by a team of students to offer an inspiring, creative and team-based environment.

The success of the DesignLab is benefiting from being closely incorporated within the overall rationale of the University of Twente and its entrepreneurial spirit.

Project proposals that do not fit in the mind-set of the DesignLab will be redirected to more applicable faculties of the university.
6. Media Factory – Aalto University

Key Facts

- **Location:** Helsinki, Finland
- **Established:** 2012
- **Lead Organisation:** Aalto University
- **Number of Employees:** 15
- **Annual Budget:** €1-5m
- **Website:** [http://mediafactory.aalto.fi/](http://mediafactory.aalto.fi/)

Type of Collaboration:

- Academic and Private Sector linked with ‘media’

Beneficiaries:

- Academic, Private Sector, and Students with an interest/question related to media

Aalto University was created from the merger of three Finnish universities in 2010: The Helsinki School of Economics; Helsinki University of Technology; and the University of Art and Design Helsinki. The combination of the three universities brought new possibilities for multidisciplinary education and research.

The new university's ambitious goal is to be one of the leading institutions in the world in terms of research and education in its own specialised disciplines.

Shortly after the merger of the universities, the concept of an open space for students to work alongside industry and academia was developed i.e. a factory. The Design Factory was established specialising in product design and development, and officially opened in 2009/10.

The informal model was deemed a success and two other factories were established shortly afterwards – Media Factory and Service Factory.

The remainder of this case study focuses on the Media Factory.

The Design Factory model has been rolled out to ten countries around the world including: New Zealand, China, and Chile and are creating a network of Design Factories.

Source: [http://mediafactory.aalto.fi/contact-us/](http://mediafactory.aalto.fi/contact-us/)
Rationale

At the time of developing the Media Factory there was only limited access for individuals with an interest in media to explore opportunities in a low risk environment. Media Factory was developed to provide individuals, businesses, students, and academics with access to media expertise and equipment for free or at a reduced cost. The purpose is to help foster innovation and creativity within the media sector.

Aalto University was the only funder of the Factory and continues to be the primary funder. The project receives annual funding from the university with no ‘official’ project end date. The continuation of the Factory depends on a number of factors: the need for access to low risk R&D; availability of funding for this type of activity; and the vision and strategic direction of Aalto University.

Description of Activity

Over the past five years Media Factory has delivered a variety of services including: access to facilities for course work and workshops, prototype development, and open work spaces.

These facilities are not only open to students and academics but also to the public (‘Open Tuesday’).

In addition to physical space, Media Factory also facilitates research and development projects relating to media.

The term ‘media’ was left un-defined in order to reach a broad audience.

Media Factory brokers collaborations between industry and academia and academia-to-academia. One of the main challenges that emerged was the inability to then carry out the actual R&D activities within the Media Factory. University policy restricted R&D activity to be carried out within the respective school or department involved.

Media Factory’s role is therefore limited to awareness raising about R&D opportunities within and across academic sectors and a match-making/brokerage service.

In addition, Media Factory piloted a number of courses including undergraduate and short courses available to students across a number of schools. After the pilot, successful courses were then integrated into the respective school curriculum.
Most Effective Projects

A number of projects were identified by the consultee as being effective. Media Factory developed and piloted a number of university courses in relation to Media. Firstly, a Bachelor level introductory course – Media in Transition – run three times during 2009-11. The course was further developed into a Masters course and offered since 2013.

Media Factory also developed ‘minor’ study programmes or course modules, these often brought together schools from across Aalto University. Modules delivered included:

- Content Business and Technologies - developed and delivered in collaboration within three schools: Art, Business, and Science. The course was attended by students from each of these schools;
- MediaBizLab – Commercialising Media as a Service, delivered within the department of Marketing and Management at the School of Economics. This course was available to all Aalto University students; and
- Art and Technologies which focused on interactive artworks and ran from 2012 to 2016.

Another effective project was an open design workshop run in collaboration with Nokia Resource Centre. This was the first time Nokia Resource Centre had engaged with Aalto University and was created by an alumni of Aalto University employed with Nokia. The direct approach to Media Factory formed a new partnership between the two organisations.

It was reported that the monitoring of impacts within the creative industries and particularly in relation to collaboration was difficult. Instead, Media Factory monitors activity-based performance, capturing information including:

Distinct Phases of Development and Implementation

Media Factory is still relatively young having been operational for five years. That being said, Media Factory is currently undergoing a transformation, combining services with Lume Media Centre. Lume Media Centre is housed within the Art and Design school within Aalto University. The Centre focuses on education, research and development and is an audio-visual production centre. Lume Media Centre combines disciplines of cinema, TV, digital media, production set design and specialises in cross-media content production and practice based research.

Lume was established 15 years ago by a Professor on the management board of the Art and Design University.

As of December 2016 Media Factory has merged with Lume Media Centre and has changed its name to Aalto Studios. Aalto University has funded the development of a new building bringing together activities in one physical location. The new facility is located beside the campus and is due to open in 2020.
The consultee acknowledged that Media Factory would be interested in capturing more detailed performance indicators in relation to collaboration, however, reiterated the difficulty in defining the KPIs and uncertainty as to what and how to measure impact.

Success Factors

Two key attributes were associated with the success of Media Factory. First, Media Factory is based on the Finnish culture. All approaches were undertaken by, and for, culture.

Second, it is essential to have the right people involved in this type of activity. Cross-sector collaboration can be quite challenging and it requires individuals that are enthusiastic and open to learning and working in new ways.

A number of locations have tried to adopt the Media Factory (and essentially Design Factory) model of collaboration. The model is reported to be most effective when a member of staff is seconded to the new location to help during the set up process.
Future Plans

As detailed above, Media Factory has merged with Lume Media Centre to form Aalto Studio. Aalto Studio will continue to support both students, academics and businesses within an interest in undertaking collaborative projects and R&D in relation to media.

Aalto Studio will have an annual budget of between €2million and €3million. In the beginning Aalto University will remain the primary funder (providing c.90% of funding), however, Aalto Studio aims to reduce the dependency on the university and become more self-sustaining.

Learning Points

- Being exclusively funded by one organisation makes the Factory dependent on internal strategic priorities, a broader funding mix would enhance its sustainability;
- Being a broker and match-maker makes it difficult to attribute research performance to activity delivered by the Factory. To gain a higher profile, R&D facilities should be created and based within the Factory.
- Faculties and departments already have links with external stakeholders and companies, to find the niche for the Factory needed perseverance to demonstrate added value by finding new additional contacts.
7. Demola International

Summary of the organisation and its range of activities

Demola International is a worldwide network of member organisations and an innovation platform for multi-disciplinary, cross sector initiatives.

The Demola model represents a university–business collaboration model for R&D and product development utilising an Open Innovation and multi-disciplinary approach. Demola International provides the network to connect the various Demola centres with each other.

The main focus of the initiative is to create an international environment of complementary skills, bringing companies and students together with different skills and perspectives to focus jointly on solving real-life problems of companies and to design new products/services.

The aim is to help companies in member’s regions to innovate by approaching their problems and development challenges in a new manner and to change the ways in which they think, ultimately with the aim of staying relevant for the future.

The Demola model involves three key stages:

1. A company articulates a real-life problem (a “challenge”) (no starting fees are involved)
2. A project is defined and a student team starts working on the problem.
3. If the company is satisfied with the result, the company can either license shared rights for it or purchase all rights for itself10 (see New Factory case study - Demola Tampere).

10 Demola Open Innovation Platform, by Kalle Lamminmäki and Vesa Salminen, The Innovation Policy Platform
Development and Implementation of Cross-Sector Approaches

Demola initiatives have a strong focus on company needs – in fact, the ideas for each multi-disciplinary project must originate from businesses.

There are a number of challenges that justify a Demola intervention:

- There is increasing pressure to stay competitive by responding to quickly developing markets and changing customer needs. This requires innovative capability and creative mind-sets (such as that represented by the Open Innovation concept).

- Small businesses tend not to consider approaching academic institutions to help solve their business problems, either due to lack of knowledge on how to contact them, or a lack of awareness or assumption that academic staff do not understand business issues.

- Those businesses that do contact academic institutions tend to request specialist/expert advice in their own field. Many have difficulties imagining that other perspectives and a multi-disciplinary approach can be of benefit to them. There is a significant awareness gap in understanding how to tap into the creative potential of working with other fields.

- There is a lack of awareness and capacity among businesses on how to utilise the positive mind-set and new ideas of the younger generation.

- There is a challenge for SMEs on how to stay relevant for the future and a widespread belief among academic institutions that current business models are unable to address some of the larger societal problems and climate change challenges.

Main Rationale

To enable creative thinking and help overcome the hesitation of small and medium sized companies in working with academic institutions. Through multi-disciplinary collaboration the aim is to engage more innovatively in the process of problem solving and to create lasting added value and economic growth.

Building The World’s Strongest Innovation Ecosystem

Framework and Governance

The Demola International network is managed by a team of eight senior members of staff, including the Chief Executive Officer. This team is supported by five senior advisors, sourced from the current pool of head officers of the 26 Demola Centres that are part of the network.
Demola follows a distinct conceptual approach for co-creation that is designed to solve real business challenges and focused on producing useful outcomes (new concept, a ‘demo’, or a prototype) that can be purchased by the participating companies.

The Demola process is formatted and facilitated by a network of 93 facilitators throughout the world. This ensures that the collaborative and creative work between the various participants follows a systematic and clearly scheduled path.

Each partner of a Demola initiative has a clear role and there are a number of simple procedures that guides the operations of a local centre (this includes contracts, intellectual property rights, licensing models, other legal requirements, business standards, etc.).

The key principle of operation is the ‘Open Innovation’ approach to enhance innovation competences for all participants (i.e. at individual as well as organisational level).

Depending on the level and nature of the project, Demola Centres can either assign the work to their own local Demola team and university students, or have a combination of network centres working jointly on the same project idea in a transnational manner.

**How it all started**

Demola International network evolved from the New Factory multi-disciplinary approach in 2008. The project was part of the Creative Tampere Programme (2006-2011) addressing economic structural change in the Tampere region of Finland, focused on supporting economic development in the Creative Industries.

Instrumental for the successful set up of the New Factory was the Nokia Research Centre that initiated university engagement and provided a long list of project ideas, which formed the first tranche of projects for multi-disciplinary student teams. (Please see relevant case study for further detail).

**Key Development Phases**

To become part of Demola International and access their network of facilitators requires that the development opportunity of a multi-disciplinary, cross-sector initiative has already been identified by a local area and that a consortium of supportive partners has already been set up.

Being part of the Demola International network can enable an initiative to source project ideas and solutions to business problems from further afield, or to access a wider range of complementary skills and students from across the world to form multi-disciplinary international project teams. This is supported by a team of professional facilitators and can enlarge the capacities of individual centres. English is the common language applied throughout the network.

Clear guidance material and support from facilitators ensured that each Demola International network member is supported professionally. This also ensures that the processes and procedures of collaborative working are all shared between the members, creating a commonality and shared identity between the centres throughout the world.
Key Achievements

From its origins in the city of Tampere in 2008, the Demola model has grown into a network of 26 cities in 14 countries, involving 900 companies and 55 universities.

In addition, there is a virtual network of 93 trained facilitators around the world.

At network level, the increasing number of partners/cities/companies/students/facilitators involved in Demola projects is a good indicator of its achievements.

As with all networks, there is a level of dependency on the activity and success rate of each individual member and the extent to which they are actually working transnationally.

The Demola process works across all members of the network in the following way:

- A consortium of local institutions, universities, local authorities and/or private sponsors becomes a member and recruits a Demola facilitator.

- A campaign or call for ideas is launched to attract companies to participate.

- A campaign is launched in the universities to attract students to the project ideas.

- The universities form multi-disciplinary study teams which work together over a period of 3-4 months. Students choose their own topics.

- The facilitator helps to overcome differences in ‘language’, approaches and creates the conditions and skills for collaboration.
• Continuous contact with the companies is important (face to face, or if in a remote location then via Skype if necessary), with approximately five hours per week dedicated to working with the companies.

• Building trust between the companies and the student teams is important and face to face contact supports this.

• There are a number of personal challenges to the process:
  o Understanding the phenomena (coming from different mind-sets)
  o Overcoming the traditional behavioural approaches of ‘students are looking for guidance’ and ‘businesses like to instruct’.
  o Learning to be able to handle the uncertainty of the process, i.e. not knowing if anything useful will result from the project (although the learning from going through the process can be regarded as a valuable result in itself).

The Demola facilitator addresses the above challenges and aspects of learning. The network has a relevant ‘tool box’ at his/her disposal. The clear structural approach of Demola offers a frame within which the uncertainty can be contained.

### What makes the approach unique?

The international dimension and potential arising from this connection for new idea generation and invention.

The fact that dedicated, professional facilitators are allocated to each local Demola initiative so that the collaborative process can be taught to and incorporated by all participants.

### Approach to evaluation and assessing achievements

Strengthening university–business collaboration is a key achievement of the model. Demola platforms have contributed to the strengthening of innovation networks, especially among universities, companies, and public sector organisations, and their work has shown that cooperation between companies and universities has intensified.\(^{11}\)

The network monitors activities which includes indicators such as:

- Number of projects implemented.
- Number of students/companies/cities participating.
- Number and percentage of licences purchased (60-65% globally).
- Income generated for the student teams.

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The Demola process helps businesses to utilise the full potential of their staff, particularly among new graduates (i.e. do not ‘brainwash’ new employees into adapting to how the business is used to working, but rather encourage them to influence the business with their new, fresh thinking).

Future Plans

A key ambition is to continue extending the global network and increase the number of transnational projects between the member centres. Unfortunately, previous talks with Scottish Enterprise were postponed indefinitely because of Brexit.

The network supports its individual members to increase its local and transnational project cases, many of which have clear growth targets.

Learning Points

A core principle of Demola is that the project ideas for multi-disciplinary study teams originate from companies and local industry.

Everyone involved needs to learn how to work in a collaborative manner.

The process of cross-sector and multi-disciplinary approaches needs professional facilitation – and the Demola International network provides access to this expertise.

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Success Factors

Key to the success of the initiative is (a) that it is focused on business need and (b) that it is facilitated to collaborate, effectively and creatively. The facilitation and training helps SMEs to open their minds as to what the university can do for them.

Different to open sourcing models, the IP rights that originate in a Demola project lie in the ownership of the students. However, the partner company whose needs originally led to the creation of the project continue to own the background materials for it. The company can buy the usage rights to the results by paying the project team an agreed reward; in other words, the team licenses its work to the industrial partner (Kilamo et al. 2011, 310). The price is based on a predefined, results-focused pricing system.

A particular strength of the approach is raising awareness among companies of the benefits of working with young people, along with raising the capacity of companies to do so. Students/young people have a positive mind-set and businesses can often ignore this potential.

Face to face interactions between the project team members are important to build trust and good relationships between the participants.
A key attraction for businesses to engage is that it is cost-free and therefore risk free for the company, while there is IP protection in place through Demola standards and contracts.

It is also interesting that the student teams (not the universities) are the original IP owners and if the project result is purchased by the company, the recipient of the sale (although a certain percentage is also paid of this to the Demola Centre).
8. REACT

Key Facts

Location: Bristol, UK
Established: 1982 (Watershed)
REACT: 2012-2016
Lead Organisation: Watershed Pervasive Media Studios (collaborative partnership)
Number of Employees: 6
Website: http://www.watershed.co.uk/studio/projects/react

Project Budget: £4m
Main Funders: Watershed: University of West of England Bristol, University of Bristol, Watershed (REACT: Arts and Humanities Research Council)
Type of Collaboration: Academia, general public, private sector
Beneficiaries: Academia, public, companies

Summary of the Organisation and its Range of Activities

REACT (Research and Enterprise in Arts and Creative Technology) was a four-year collaborative project led by Watershed Pervasive Media Studios and five academic institutions. Funded by the AHRC, REACT was one of four ‘Knowledge Exchange Hubs for the Creative Economy’, and offered space for a diverse community and talent pool of artists, creative companies, technologists and academics to engage in collaborative initiatives in the area of design and creative technology. Watershed hosted an open plan working space for over 130 artists and businesses that were interested in collaborative, inter-disciplinary co-production to create novel design through dialogue and partnership.

The general public was frequently involved as participants, audiences, visitors or customers. The particular approach promoted by Watershed is called ‘Sandbox’.

REACT aimed to foster collaboration between academia and creative companies including those based at Watershed connecting researchers from art and humanities with creative
businesses to produce prototypes of products and services, and to test the ideas with public audiences. REACT focused on collaborative ideas in digital design.

Typical cross-sector themes pursued by Watershed were Playable Media, Publishing, Interactive Documentary, Creative Economy, the Automation of Everyday Life, and creative projects for children. There was also specific research undertaken into co-production.

Each week, an Open Studio Friday provided access to all. The studios were designed with disability in mind.

**Main Rationale**

REACT sought to offer an accessible space for collaboration and generate a dynamic network of researchers, companies and other organisations with the purpose of generating ideas and innovative solutions to everyday challenges.

The project set out to make an impact on the creative economy.

Based on the principles of Open Innovation, the ‘Sandbox’ approach developed by Watershed, sought to maintain the human experience at the heart of technological innovation.

REACT aimed to expand the knowledge and application of the Sandbox approach to other areas in England.

The research also explored the co-production method, and the implications of open access, open sourcing of cultural and scientific knowledge on knowledge production, ownership, and dissemination.

**Development and Implementation of Cross-Sector Approaches**

The creative industries (CI) is dominated by micro-businesses that do not fit easily with the high-growth, high-tech business development models. At the same time, the CI sector as a whole represents a high-growth sector. The CI sector needs to gain and maintain a thorough understanding of its diverse and small scale setting to foster the potential of the micro-business base and motivate this ‘labour force’ to maintain high innovative and creative outputs.
Institutional Framework and Governance

REACT was overseen by a Steering Board consisting of Pro Vice Chancellors for research from the five partner universities, together with leading creative economy partners.

Since it was established in 1982, Watershed took on the role of connector and facilitator of collaboration between the academic, business and public partners. Cultural programmes, public engagement and showcasing were prevalent in many of its projects. Although the REACT project was led by Watershed, its implementation was carried out through a collaborative and equal partnership approach.

This was an important principle not only with regard to the Open Innovation approach pursued, but also in view of learning how new developments such as open sourcing and collaborative ownership of project results (i.e. prototypes) and findings could be dealt with.

Key Development Phases

The REACT project aimed to expand the collaborative Watershed approach to other geographic areas (Bath, Cardiff, and Exeter).

The Sandbox method was developed as a cultural ecology approach whereby cultural ecology describes the complex system of relationships and interdependencies that underpin creative productivity.

This approach was adjusted to the ‘REACT Sandbox’ approach to foster successful innovation by understanding better the dynamics of the organisational systems that people work in. The approach was based on a holistic rationale focusing on the relationships between creative people with different backgrounds and across a variety of sectors.
Delivered by Watershed Creative Producers, the Sandbox method aimed to:

1. Produce original prototypes that have both commercial and cultural value.
2. Explore new digital practices that change audience experiences, develop new creative forms and challenge industry status quo.
3. Support talented people to develop their skills, knowledge and capabilities.

Key Achievements

The final report of REACT provides a good insight into the range of impacts achieved including the effects of the collaborations at an organisational and personal level. In addition to a number of case studies / stories of change, the report also lists the quantitative achievements:

- 53 collaborative projects;
- 57 companies and 73 academics engaged in collaborative project work;
- 86 new products created;
- 76 new pieces of software generated;
- 10 new companies set up;
- 43 jobs created;
- 25 academic research articles published;
- 90 presentations held at research conferences; and
- 7,000 members of the public engaged.

The project also gathered information on their financial impact and states that the £2.5m REACT budget (the share of the budget ringfenced for collaborative project work) stimulated a further investment of £5.35m in Watershed projects from private investment, sales and commissions. Companies and university partners were able to attract funding for new projects and ideas that were triggered by REACT participation and an additional £2.23m was
accessed from research grants for internal and external investment activities relating to REACT legacy activities.

**How activities and projects were chosen?**

In consultation with creative economy advisors, Watershed chose five themes for the REACT project: Heritage; Books and Print; Future Documentary; Internet Connected Objects; and Play. The rationale for their selection was that these industry sectors were in most need of research and development support by using disruptive approaches for technological innovation. For each theme a call was organised and interested businesses and researchers participated in a one-day session to meet and generate initial ideas.

1. These ideas were then developed into funding bids by the university partners and Watershed.

2. A REACT Operations Group (representing the university project partners and advisors) made the decisions on which ideas were funded by REACT (between £10k and £50k covering the expenses incurred by the companies and university partners).

3. A number of ideas (a cohort) were chosen for each theme and each project was supported by a programme of workshops, events and business development meetings. Each project could also access external advisors and facilities.

4. Importantly, the projects were coordinated by a Creative Producer with a supporting team of industry advisors, business mentor, PR and legal coaching (no project was left on its own to collaborate and network).

5. A network of peer support was created between the projects within the same REACT theme providing continuous feedback on progress and the process itself.

6. At the end, each project presented their prototypes to the public. In addition, each project had its own five minute film as a promotional tool and was supported to access funding and investment for the next stage where appropriate.

7. Creative companies retained all IP produced during REACT.
How was cross-sector working achieved?

The Sandbox approach promoted a number of distinct values which were facilitated by a ‘producer’ and shared by participants.

This included:

- Supporting risk – participants need to feel safe, so that they can openly share their ideas and feel able to fail and learn from this. The producer of a Sandbox had the role to facilitate this and to carry the risk, show resilience and commitment.

- Diversity – throughout the process projects need to have diversity at their heart based on the principle that problems are more effectively solved and higher quality work produced when people with diverse backgrounds work together.

- Sharing and generosity – participants need to be open about ideas and their development; ideas are shared in workshops and prototypes are shared with public audiences to spark further ideas, refine design, connect and generate interest. Participation means agreeing that the benefits gained from sharing outweighs the potential risk of losing competitive advantage.

- Practice-led research – the principle of learning-through-making was at the core of the collaborative projects.

- Building community – the approach aims to create a sense of collective enquiry among projects. Skills and experience of participants are made visible, a permissive environment is created in which trust is developed helping to generate momentum.

- Caring for people – participants need to feel respected and cared for. This is the role of the ‘producer’. Contributions, ideas and concerns need to be listened to and taken seriously. People are always more important than the projects or products.

Approach to Evaluation and Assessing Achievements

Aiming to bring about change at an organisational and personal level, the assessment of achievement was part of the design process of REACT, for example the senior level composition of the Steering Group was chosen with an eye on inspiring decision makers and those that could influence administrative and organisational processes. Similarly, the composition of participants received careful attention to ensure that the participant groups worked well thereby maximising the likelihood of creating positive, lasting relationships and learning from each other.

REACT is one of the few examples that have monitored and reported their achievements in detail (some of the university partners have undertaken research and evaluation of the approach). This was driven by the understanding that capturing the narratives and stories of change was vital to showing the value of cross-sector collaborative work. As the Final Report of the project shows, where possible the qualitative outcomes were supplemented with quantitative measures.
Success Factors

- The security of funding over four years provided space to explore the various ideas in more depth, test methods and refine methods in the context of other sectors and to develop relationships. This freedom and security was critical for the success of the project.

- Equal collaboration was enhanced through meeting in a neutral space.

- Participants across the different sectors and disciplines genuinely started to share and explore ideas – despite a more critical perspective at the outset. A good sign for this was when you could not tell anymore who the academic or business person is.

- Creative hubs succeed when they are driven by values (such as enhanced knowledge, skills, generosity, mentoring, inspiration and leadership) rather than outputs.

- The professional relationships that were built through REACT are continuing and conversations are ongoing. The partnerships between Watershed and the universities has become more productive and significant learning was achieved in working with larger organisations.

- The method has been open sourced and is accessible on the internet.

- New companies have been set up.

- Compared to other accelerator projects, REACT outputs compared well.

- Some universities and professionals continue with some interesting projects (Exeter University).

- 6,000 members of the general public attended REACT’s final event.

Learning Points

- Collaborative projects need a long time frame to develop effective relationships - this was also continuously reviewed, i.e. do the participants inspire each other, do they listen to each other.

- It is important not to assume specific approaches of participants based on their institutional or disciplinary affiliation.

- Both, academic and business participants, were beneficiaries of the initiatives – both sides need to acknowledge this to ensure equity between the partners. This was also
emphasised in contracts. It was unusual for the universities to be equal partners (not leading or owning).

- Academics tend to have a more long-term perspective whereas businesses need solutions quickly – a lot of groundwork was needed to overcome these challenges regarding language and expectations. But it was achieved successfully.

- A lot of time was needed to ensure the different sectors understood how collaborative projects worked. This included the institutional and administrative requirements. To adjust conventional behaviours surrounding topics such as IP and contracts in academic institutions needed a long time to adjust, and after the completion of REACT were reversed back to their original format and content. This might have been due to staff changes.

- The REACT collaborative project groups shared project responsibilities and through building trust over time, the groups were able to take more risk taking in a productive and explorative manner.

- The final year of the project was used to reflect on the findings, draw the projects to conclusion, and to celebrate the findings jointly with the community.

- There was no budget to support the start-up and development of businesses beyond prototype developments. Therefore, the new start-ups were left within the remit of the universities to build on the momentum of the collaborations.
9. Innovation and Creative Intelligence Unit

Key Facts

<table>
<thead>
<tr>
<th>Location:</th>
<th>Sydney, Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established:</td>
<td>2012</td>
</tr>
<tr>
<td>Lead Organisation:</td>
<td>University of Technology (UTS)</td>
</tr>
<tr>
<td>Number of Employees:</td>
<td>25 FTE</td>
</tr>
<tr>
<td>Annual Budget:</td>
<td>Circa $1m (AUS)</td>
</tr>
<tr>
<td>Main Funders:</td>
<td>UTS</td>
</tr>
<tr>
<td>Type of Collaboration:</td>
<td>Academic, Community and Businesses</td>
</tr>
<tr>
<td>Beneficiaries:</td>
<td>Students and staff at UTS; industry partners</td>
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</tbody>
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Summary of the organisation and its range of activities

UTS is ranked in the global top 50 universities under 50 years old and is proud of its high impact research, industry partnerships and practice-oriented learning model. There are many local creative and digital firms and technology start-ups in Sydney, and UTS has led and facilitated the establishment of a Digital Creative Precinct to develop a thriving and innovative digital creative ecosystem.

The Innovation and Creative Intelligence (ICI) Unit is an initiative of UTS which can be considered to be an “interconnected hub of innovation”. It oversees and coordinates the UTS Innovation, Entrepreneurship and Creative Intelligence (IECI) Strategy - essentially, the strategy supports activities in four key areas: learning and entrepreneurship; research and creative practice; Precinct/Ecosystem; and engagement and practice.

The Unit works across the university - and with industry partners - to pilot and prototype new models of teaching, learning and industry engagement. The collaborations with industry partners vary depending on the approach that these partners want to take (e.g., some partners prefer to work more formally than others). The Unit works on a variety of activities, all with a focus on innovation and creative intelligence, and they employ a ‘non-traditional’

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team from a wide range of backgrounds (including digital media, design, and entrepreneurship).

By focusing in teams on high-level conceptual thinking and problem-solving practices, students learn to work across and between disciplines, discovering rare skills and mind-sets – and in the process it is hoped that they become lifelong innovators, entrepreneurs, creative practitioners and change-makers.

The main activities of the ICI Unit include:

**Entrepreneurship:**

- Entrepreneur at UTS - a microsite linking everything associated with entrepreneurship at UTS.

- The Hatchery – a pre-incubator programme which was launched in 2015 and provides entrepreneurship skills for UTS students. It consists of a 10-week programme (run twice a year) with 3 boot camps, events, masterclasses and networking opportunities.

- Hatchery+ - a 3 month accelerator programme, also offering co-working space and mentoring and workshops to participants. In 2016, 50 startup ventures applied for Hatchery+, with 15 ventures completing the programme.

**Innovation:**

- ICI Innovatory – a free online information resource relating to innovation, creative intelligence and entrepreneurship.

- Innovation Research and facilities – as part of their research strategy, the Unit has built research capacity and performance in 5 areas: health, data science, sustainability, future work and industry, and social futures.

**Creative Intelligence:**

- Labs, Masterclasses and Panels – these programmes are designed to connect business, entrepreneurs, creative practitioners, academics, researchers and UTS staff and students.

- Creative Clusters – weekly 2-hour workshop sessions to discuss new technologies.

**Talks:**

- UTSpeaks: Shapeshifters - a free public lecture series focused on global issues.

- Beautiful Minds – a free programme of small scale talks/workshops.
As well as delivering programmes, courses and events, UTS is committed to providing physical spaces and labs for students – and staff – dedicated to entrepreneurship. In addition to the pre-incubator (The Hatchery) and the accelerator (Hatchery+), the Summer Venture Lab in the School of Business takes place each year within the MBAe, and there are dedicated and specialised spaces for students to collaborate, make and investigate in the areas of Design, Science and Engineering. New cross-faculty labs have been rolled out in 2017 - such as Proto Space\(^{13}\), which traverses Design, Architecture Building, Engineering & IT and Science.

### Main Rationale

The ICI Unit champions and coordinates the UTS IECI Strategy, which was set up by the federal government. The pan-university strategy will “foster a collaborative culture across the university, through ongoing thought leadership and networking”, and “provide a space and opportunities to prototype, pilot, incubate and share experimental cross-university projects, events and other initiatives”.

### Development and Implementation of Cross-Sector Approaches

The launch of the Innovation and Creative Intelligence Strategy (in 2015) led to increased engagement and sharing of ideas across the university, and with industry and government.

In 2016, the ICI Unit launched a free workshop series (Creative Clusters) aimed at encouraging university staff and industry to learn and share knowledge of emerging technologies through a community of creative practice.

They also held two UTSpeaks: Shapeshifters talks (Designing for Social Good, and Enabling Entrepreneurs) - these events helped to showcase the research, technologies and thinking being developed within the university.

The new IECI Strategy (2017-2020) fosters a culture of creative collaboration between internal stakeholders of UTS, and external industry partners, and guides the ongoing development of a highly connected urban campus.

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How it all started

In a response to reports (commissioned by government, industry and UTS itself) which all identified an increasing demand for skills linked to creativity, innovation and entrepreneurialism, UTS recognised that they needed to transform their approach to teaching and learning, to research, and to industry engagement. In 2012, UTS launched a six-year Creative Intelligence Strategy, designed to establish UTS as a world leader in creative innovation, and set up the ICI Unit to complement their involvement with the Creative Industries Innovation Centre (part of the Australian Government’s Enterprise Connect programme).

Institutional Framework and Governance

The UTS Council is the governing body for the university, and the council's powers and functions include the “control and management of the University's affairs and concerns”, acting in all matters “in a manner that best promotes UTS objectives and interests”. Its membership is made up of official, appointed and elected members.

The Unit is mostly funded by the university ($1m Australian dollars) with some governmental financial contribution, also, some sponsorship ‘in kind’ from industry (in the form of mentoring, coaching, use of equipment etc.).

The Director of the ICI Unit provides bi-annual updates to the Senior Executive and Deans of UTS on the strategy implementation plan.

Key Development Phases

In 2012, the ICI Unit was established as a strategic initiative providing services, programmes and opportunities to engage, for the benefit of UTS students, staff, and local/global communities. A new deputy director was recruited in April 2015, with the remit to shape the ongoing vision and drive the implementation of the UTS ICI Strategy, and champion a wider strategic focus on innovation and creativity activities across UTS. Currently, there are around 15 members of staff.

The Faculty of Transdisciplinary Innovation (FTDi) was established in November 2016, and is the first of its kind in Australia. It was set up to focus on teaching and learning across all faculties, supporting transdisciplinary research projects, and research into transdisciplinarity.

The main aim of FTDi is to “prepare students for the changing nature of future workplaces”, and is home to the Bachelor of Creative Intelligence and Innovation (BCII) degree. The BCII degree is a cross-faculty collaboration – spanning seven of UTS’s faculties (Business/Law, Communication, Health, Science, Engineering, IT, Design/Architecture and Building). Instead of lectures and tutorials, students take part in ‘hackathons’, ‘think tanks’, and ‘hot housing days’, all housed in a creative lab environment during winter and summer schools.
“The difference with the Bachelor of Creative Intelligence and Innovation is that it allows you, sort of, to more play with ideas and it’s a lot more fluid. They haven’t taught us any facts, they’ve taught us ways to look at problems and then set us up with things to go and look at and research.”

BCII Graduate

The Provost of UTS has overall responsibility for the Innovation and Creative Intelligence Strategy, assisted by the Assistant Deputy Vice-Chancellor (Innovation) and the ICI Unit (other Deputy Vice-Chancellor portfolios are responsible for driving and implementing specific Innovation and Creative Intelligence core strategies, all with overlapping responsibilities with the faculties). The ICI Unit will support and coordinate the strategy’s implementation and will look to create a collaborative culture across the university to inform and guide its development. It will provide ongoing thought leadership and engagement, and will also continue to prototype, pilot and incubate selected projects and initiatives.

Key Achievements and Examples of Activities

In order to drive the Innovation and Creative Intelligence Strategy, the Unit delivers programs and projects in areas that include:

- emerging technology;
- new ways of thinking;
- entrepreneurial mind-sets;
- start-ups; and
- creative intelligence.

There are a number of courses across UTS that involve innovation, entrepreneurship and creative thinking (including the BCII; Masters of Business Administration in Entrepreneurship (MBAe); and BCII + Double Degrees). The BCII is a flagship transdisciplinary degree, and the number of applications for the BCII increased in 2016 by 11%. The BCII course received international recognition at the Wharton Reimagine Education Awards in Philadelphia in December 2016, receiving the bronze Presence Learning Award. It is the goal of UTS to have 5-10% of students enrolled in transdisciplinary courses.

One example of the type of diverse, collaborative activities that the ICI Unit hosts was the Future of Storytelling Symposium14. This event took place in 2015 and brought together around fifty people, and consisted of eight sessions over a period of sixteen weeks. It involved leaders within storytelling, technology and futurism sharing cutting edge technologies, and exploring how leading storytellers are pushing the boundaries of emerging technologies. Some of the collaborators that attended included transmedia artists, experts in

augmented reality and interactive narrative, inventors, futurists, film makers and researchers. The event resulted in knowledge exchange and proof of concepts.

**Ramen Life**

This start-up company is a spin-out from the ICI Unit – the co-founder/entrepreneur behind Ramen Life is also a programme manager for the Hatchery Programme.

The company, which was set up in spring 2016, is ‘an online presence for physical start-up communities’, which aims to connect and engage entrepreneurs/start-up companies, and allows them to see what other people working in this space are actively involved with – almost working like a Chamber of Commerce for this localised start-up community.

The co-founder had experience of delivering start-up development programs/events, as well as providing one-on-one mentoring to start-up founders from a diverse range of industries, but he was inspired to develop Ramen Life through his work with the ICI Unit. Interestingly, whilst most universities have incubator/accelerator facilities for student start-up companies, UTS also encourages staff start-ups.

In addition, UTS can provide co-working spaces and encourages networking with creative agencies, industry partners and start-ups (thanks to its city campus, and thus physical proximity to these businesses). Some of the local businesses that actively collaborate with UTS include: blue chip organisations, such as the Commonwealth Bank, the Australian Broadcasting Corporation (ABC), and Microsoft; and smaller organisations supporting innovative start-ups, such as Falling Cats Consulting (a start-up consultancy), 2nd Road (an innovation consultancy), and BlueChilli (a venture technology firm).

**STEAMpunk Girls**

Research suggests that the solution to improving Australia’s STEM skill gap is collaboration between businesses, government and the education sector. The STEAMpunk Girls pilot was developed through a co-design process (which began with two workshops in November 2016) with twenty four high school girls and five teachers. It is an educational programme which advocates for young women, aged 12-16, to engage with STEAM (science, technology, engineering, arts and maths), help them develop entrepreneurial mind-sets, and create their own counter-culture. Throughout

15 [https://ramenlife.co/](https://ramenlife.co/)
the course of the pilot (which runs from May to August 2017) sixty girls from four high schools in Sydney will engage in project based learning: using the theme ‘Future Earth’, the young women will identify a problem area to work on and develop a project that can solve it. It will culminate in a showcase event that ties in with National Science Week, where they will pitch their solutions and present the prototypes they’ve developed.

To introduce the participants to entrepreneurial methods and ways of thinking, Hatchery students will work as coaches, helping to guide the young women through their projects and support their understanding of STEAM and entrepreneurialism. They will also act as role models for the participants, highlighting different pathways from high school into tertiary education.

“We needed to find pathways to ignite STEM passions of our female students who tend to adopt a more traditional pattern of study so a connection with the Arts provides one avenue. Introducing such things as wearable technology, using 3D printing to create fabric for costumes or creating interactive art installations can help students see STEM in action and spark their enthusiasm. Promoting a STEAM approach at our high school has been one way to engage and stimulate student interest and develop cross curriculum opportunities”

Head Teacher TAS (Technological and Applied Studies)

After the pilot stage, the next stage of STEAMPunk Girls will involve developing scalable educational interventions that can be run in schools across Australia to empower and educate young women. These interventions will use a multi-targeted approach focusing on high school girls, their parents and their teachers.

“In the 2017 National Science Statement, participation in science, technology, engineering and mathematics subjects in Australian schools is declining. If this decline in participation and performance continues, Australia may be unable to supply the skills required for the future workforce.”

UTS Hatchery Program Manager

How are activities and projects chosen?

The ICI Unit is committed to collaboration across the university, with industry and the community ICI pilots and prototypes new models of thinking and approaches.

How is cross-sector working achieved?

Cross sector working in this context can be considered to be both:

- Internal: collaboration across different university faculties; and
- External: engagement with a range of industry partners – both established businesses and the vibrant start-up community in Sydney.

The industry partners can provide a range of support including sponsorship, equipment use, and mentoring. UTS is also a leading partner in Piivot16 - a partnership of tech start-ups,

16 https://www.piivot.sydney/
digital, creative, education and corporate partners seeking to increase opportunities and outcomes for Sydney's start-up community.

**Approach to evaluation and assessing achievements**

Whilst the Unit will administer post-programme surveys, it is challenging to report back on outcomes as the programmes involve networks of people.

They welcome anecdotal, informal feedback from participants, and present their achievements through the development of case studies and visual representations of their range of activities.

**What do funders request to be reported?**

Metrics are gathered for the entrepreneurship programme, as outcomes are not just for the internal team.

The Hatchery project is more about changing mind-sets and capacity building, which makes it difficult to measure outcomes through monitoring and evaluation frameworks, or impact assessment.

There are two main tracking metrics for creation and innovation: research metrics, and reputation (which can include coverage, awards, and overall credibility).

**What makes the approach unique?**

The double degree: Bachelor of Creative Intelligence and Innovation (BCII) is a cross-faculty collaboration – spanning seven of UTS’s faculties (Business/Law, Communication, Health, Science, Engineering, IT, Design/Architecture and Building).

The ICI Unit sees creativity as a new frontier for problem solving to approach global matters such as food supply and energy use, indeed how students collaborate and solve problems in a studio environment forms part of the degree’s program.

The location of the Unit – being in close proximity to the flourishing start-up community of Sydney and to the industrial centre is a success factor for UTS.

**Success Factors**

Whilst most universities have some kind of incubator/accelerator, the ICI Unit appears to be a unique offer in that it’s not just about student start-ups but also staff start-ups (e.g. Ramen Life - see above). Its location also appears to be beneficial, in that it is very centrally located, with a city campus. This – and its close geographic proximity to an engaged and connected start-up community – contribute towards its success.
Future Plans

There are two main challenges faced by the Unit:

- they are funded from a range of faculties, so they need to see where they can add value (for example, STEAMpunk Girls changing their quality of thinking); and
- they need to prepare students for workplaces of the future, and design programmes that are relevant to their needs (they ask students “what’s your generation looking for in work?”)

Whilst there’s a high level of commercial awareness among young people, there’s also a really strong interest in social enterprise models.

In terms of expansion, potential future plans for the Unit involve building a network within the South East Asia and Pacific regions.

What is at the core of the initiative?

- Creativity is the new frontier for problem solving regarding global matters (food supply, energy use)
- Harnessing and integrating the Unit’s existing strengths in creativity, technology, and innovation (creative innovation and creative intelligence)
- To pilot and prototype new models of teaching, learning and industry engagement.
10. MindLab

**Key Facts**

**Location:** Copenhagen, Denmark  
**Established:** 2002  
**Lead Organisation:** Danish Government  
**Number of Employees:** 21 FTE  
**Annual Budget:** Around 10 million Danish Kroner (£1.2m)  
**Website:** [https://www.centreforpublicimpact.org/welcome-to-mindlab/](https://www.centreforpublicimpact.org/welcome-to-mindlab/)

**Main Funders:** Central Government  
**Type of Collaboration:** Public Sector/Community/Business – Multidisciplinary  
**Beneficiaries:** Danish population/society

**Summary of the organisation and its range of activities**

There has been a significant growth in the number of innovation labs in recent years, partly in response to the increased complexity of public policy issues, which require new approaches and new ways of working. These labs provide an alternative to governments investing time, money and social capital in large-scale policies and programmes that may fail to achieve the results expected. Innovation labs are dedicated spaces for investigating and experimenting through trial and error to understand better what works in public service design and delivery. They often give birth to innovative projects or take the first step in scaling successful ones. At their best, innovation labs consist of governments working in new and often challenging ways to yield results that accurately address the needs of service users and society.

MindLab is a Danish cross-governmental innovation lab which develops new solutions for the public sector through engaging both civil servants and citizens in identifying problems and developing policy recommendations. It does this by using a human-centred design (HCD) approach. This approach helps government agencies redesign their services and make policy decisions around the experiences of the end user.

MindLab is instrumental in helping key decision-makers and employees from its parent ministries (the Ministry of Business & Growth, the Ministry of Taxation and the Ministry of Employment) view their efforts from the outside-in, to see them from a citizen’s perspective. MindLab uses this approach as a platform for co-creating better ideas.
The Danish Government has invested in this dedicated innovation unit. They are building government capacity by showcasing how things can be done differently, and introducing design-led innovation methods to government policy and service development.

Main Rationale

MindLab was initially launched as an internal incubator for invention and innovation within the Danish Ministry for Business Affairs. Its mission statement is “MindLab works with its owners to create change which generates the desired value for citizens, businesses and society.” In its policy phase, MindLab never sought to take the lead in policymaking, but applied design ‘know-how’ to coordinate civil servant work.

As it has developed, MindLab has embraced an HCD approach as its method for innovation, and it has expanded its remit to work with other ministries. These strategic partnerships with new government departments are a deliberate attempt to create more systematic change, arising from the view that public sector innovation does not come from a single project, but instead needs to be sustained and spread through cross-cutting and ongoing partnerships.

Development and Implementation of Cross-Sector Approaches

Innovation labs – such as MindLab - are designed to foster collaboration - established as platforms where many different stakeholders can engage in interaction, dialogue, and development activities.

The initial goal of MindLab was to be a ‘triple helix organisation’ – including the ambition of involving ministries, universities and private companies. This model would be complemented by a number of networks:

- public policy to help cross-governmental collaboration;
- private sector to strengthen public-private cooperation;
- the general public – MindLab’s work focuses on helping public servants to understand the citizens they serve better; and
- professional academics with the aim of establishing a more robust methodological foundation for MindLab’s work.
Institutional Framework and Governance

The Danish Government has invested in MindLab, as they are building government capacity by showcasing how things can be done differently, and introducing design-led innovation methods to government policy and service development.

MindLab’s Governance Board agrees to their annual work programme, ensuring that they are focused on priorities for their sponsors, and they allocate the team’s time to specific tasks. The aim is to provide complete transparency and to affect greater change through longer-term collaborations.

Ownership of MindLab, and partnerships, have changed over the years:

- 2002 – MindLab was created by the Ministry of Economic and Business Affairs as an internal incubator for invention and innovation – at that time, the vision of an in-house laboratory as a centre of creativity and innovation was unique for a ministry.
- 2006 - MindLab was turned into a cross-ministerial innovation unit, with a focus on the active involvement of both citizens and companies in developing new public-sector solutions.
- 2012 - the Ministry of Education became a new partner, and the existing board structure was replaced by a more strategic, decision-oriented model with only the permanent secretaries as board members.
- 2014 - MindLab took a strategic step in moving from being cross-ministerial to become “cross-public” adding the municipality of Odense to the circle of owners. This new

How it all started

There has been a growing interest in the role and application of service design in the public sector and in policy making, including the European Commission, which has recognised service design as a key driver of service innovation, social innovation, and user-centred innovation. The initial inspiration for MindLab was Skandia - a Swedish insurance company - which created a similar innovation lab (the Skandia Future Centre). In addition, prominent business school academics expressed an increasing interest in what role innovation played within the Ministry for Business Affairs.

MindLab was tasked with using design methodologies to coordinate project teams to help cut across disciplinary and departmental silos and engage more directly with user needs (sometimes through co-design with members of the public). Through prototyping, they could produce more workable solutions and communicate them to decision-makers so as to have a good chance of implementation.

The original intention was that MindLab should serve the Ministry of Business Affairs, but other ministries approached MindLab looking to access to its services. Large private companies also showed significant interest in its work.
formalised partnership with Odense recognised an increasing need for testing new ideas at the local level.

**Key Development Phases**

At its outset, MindLab engaged mainly in service design projects. Over time it has moved on to projects with more complex dimensions and deliverables (such as engaging in policy making, reform, and capacity building).

There are six identifiable phases of MindLab’s development:

- **1st phase** – After having run nearly 280 workshops between 2002 and 2006, the demand for MindLab’s support decreased. This left a strategic choice for the future. After a thorough process of reflection, MindLab was turned into a cross-ministerial innovation unit focusing on user-centred methods to enhance innovation across government.

- **2nd phase** – user-centred innovation, became more of a design thinking process involving businesses and stakeholders. A new team of five people were hired to focus on design, social research and public administration.

- **3rd phase** – Along with multiple presentations for international governments, organisations and institutions, the book “Leading Public Sector Innovation” (based on experiences from MindLab) is published, and becomes an international reference point in the literature on public innovation.

- **4th phase** – In 2012, a new advisory board was formed with international experts from different fields to ensure that MindLab makes the most of its position and possibilities.

- **5th phase** – MindLab develops capacity: MindLab helps the UK government to set up a policy lab in the cabinet office, and assists various governments set up innovation labs in their government administrations (including Uruguay and Canada).

- **6th phase** – Enabling a new public sector culture: i.e. innovation labs transforming from being facilitators of process and service design to enablers of the cultural change in the public sector.

**Key Achievements and Examples of Activities**

A range of research techniques are used to understand user experience – interviews, structured workshop discussions, journal writing and ethnographic field studies. These insights are then communicated back to government ministries to develop potential solutions that are designed around citizen experience. Rapid prototyping and testing is used to co-create solutions with citizens, businesses and government agencies.

To understand user experiences, MindLab draws on a range of techniques and methods, interviewing users, applying various workshop formats to structure group discussion, asking users to narrate their experience by taking photographs or keeping a diary. These insights are then collated to be communicated back to the ministries, and in some instances are used to prototype potential solutions.
The MindLab office hosts periodic workshops and seminars, and is designed as a neutral space for cross-governmental collaboration and innovation. To change government culture, MindLab runs bespoke training courses with civil servants on the use of design methods, focusing the training around a particular challenge a ministry is facing.

Source: https://www.facebook.com/MindLabdk

For example, in one project, MindLab worked with the National Board of Injuries to try and improve the re-entry of young victims of industrial injury back into the workforce. MindLab used ethnographic research to reframe the question and understand the issues from the perspective of service users. MindLab found that young people experienced a range of issues with bureaucracy depending on the service, from healthcare to social work, and that they often struggled to understand the forms, letters, and questionnaires sent to them, and were often frustrated by the red tape that they experienced when trying to get back to work. MindLab used the research to work with staff from the National Board of Industrial Injuries, leading to a shift of the agency's core mission to focus much more heavily on employment outcomes for citizens. Four specific ideas and solutions were also developed, helping simplify how services are communicated and making it easier for young people to re-enter the workforce.

Another MindLab project involved getting businesses involved in the development of proposed reforms to the food industry. The Danish Government recognised the food industry as a future growth sector, but one that was highly regulated. As part of its work with the Ministry of Business and Growth, MindLab interviewed four companies to understand their experiences of current legislation. The insights were presented by MindLab at a government growth meeting, helping the government consider the experiences of companies on the ground when developing future policy.

MindLab develops projects and change programmes in collaboration with each of its government owners (the Ministry of Business & Growth, the Ministry of Taxation and the Ministry of Employment). HCD methodologies, and an ethos of listening to and learning from users, are the central elements of MindLab’s work. Whilst HCD is not a radically new approach in the private

Source: http://mind-lab.dk/en

sector, its methodologies are fairly new to the public sector. However, design for policy approaches are increasingly being adopted and explored in the context of government policymaking. For example, in 2014 the UK government set up Policy Lab as a creative space where teams from different government departments can develop the knowledge and skills to make policy in a more open, data-driven, digital and user-centred way.

How are activities and projects chosen?

Initially, MindLab mainly engaged in service design projects but over time it has moved on to projects with more complex dimensions and deliverables, such as engaging in policy making, reform, and capacity building projects. MindLab ultimately belongs to three different ministries (the Ministry of Business and Growth, the Ministry of Employment and the Ministry of Education) and one major municipality in Denmark (Odense, the third largest city in Denmark). MindLab collaborate closely with senior managers and staff within each of these organisations to provide new insights, new solutions and new understandings to the owners regarding their work with policy development and policy implementation.

Through this process, MindLab’s ultimate goal is to contribute to positive outcomes for the users and citizens.

As part of MindLab’s objective to change government culture, it previously ran courses with civil servants to help increase the use of design methods. Despite demand from colleagues in government, MindLab recognised that these courses did not lead to a sustained change in culture. As a result, training has been reframed; instead of a standard curriculum, the training is bespoke and embedded into each project. This helps to structure and focus the training around the demands of the challenge that a ministry is experiencing.

How is cross-sector working achieved?

The MindLab team includes a mix of skills that reflects the organisation’s ethos and method, including social research, design, public administration, project management, organisational development and creative facilitation. The team is relatively stable, with the majority working at MindLab for several years.
The LabRats Project (which was launched in 2015) gathered people from each of the ministries who collectively promote new ways of working through disseminating skills. The aim of LabRats was to “connect the innovative public servants in mainstream departments with one another, and to use them as bridgeheads from which to propagate a totally new institutional culture”.

Along with the core staff members are government employees, who will be assigned to each project for a period of six months to one year. They are instructed in MindLab’s methods and approaches, and receive training. When their period is over and they return to the various ministries, they bring with them some of MindLab’s ways of working, which means that increasing numbers of government officials have an understanding of the significance of the participatory design.

**Approach to evaluation and assessing achievements**

Measuring impact is a constantly evolving process. They have indicators for every specific process, but, “how do we set up indicators that are right to measure what? In many cases we won’t know until years from now”.

One example of a key “achievement” for MindLab was the project to help businesses to find the right industry code for registrations – this demonstrated a 21:1 return on investment in savings to government and businesses.

The types of projects MindLab select tend to be highly complex and based on policies (rather than politics) or regulations. As a result, it can be difficult to measure outcomes as a measure solely of MindLab’s work: for example, working at getting the long term unemployed back into employment – six months after MindLab work you can review the unemployment figures, but are the improved statistics the result of MindLab work alone? Or is it possible that external influences (such as the appointment of a new President) can affect these statistics?

Some of the ‘successes’ they identify include:

- Returning ‘customers’ – if people come back they must be happy with their experience;
- Change in behaviour of citizens (again, can’t attribute outcomes, e.g., getting a job might not necessarily down to work done at MindLab) or ‘learning goals’; and
- Behavioural change within partners (this is the most abstract result/impact) – new shifts in cultural thinking through enabling conditions.

**What do funders request to be reported?**

To track their overall progress, MindLab collects quantitative information for reporting to their governance board, including hours spent on each project, number of citizens or businesses involved, and the activities carried out in relation to each project. This management information helps the board to manage and allocate MindLab’s resources.
What makes the approach unique?

Important to gather the right cross-section of experts and practitioners to generate ideas, followed by prototyping the most promising ideas among them - and rapidly applying the prototype in the field.

Service design covers many areas and disciplines, and a greater collaboration between sectors and different stakeholders is needed to address cross-cutting issues. Different people have a lot of bring to each other, and service design works best when people collaborate and make informed decisions together.

Success Factors

MindLab was placed in the Ministry of Business Affairs close to the Minister and the Minister’s advisers. The MindLab management and team developed the layout of the lab so as to facilitate design activities such as multidisciplinary teamwork and visualisation. The lab was established as an internal consulting unit funded by the Ministry’s existing budget. For the preparation of each new policy proposal, a ministerial team was established. It was up to each team whether it used MindLab or external consultants.

MindLab has had a Permanent Secretary throughout its lifespan – this level of continuity has been vital. Also it has been important that civil servants form the team at MindLab – so the people within Government they work with are colleagues – they’re not external consultants, and they build good relationships.

Future Plans

MindLab believe that there is still a long way to go to change the public sector!

However, MindLab is not about hijacking the government agenda, but instead about creating reference points in terms of projects and interventions. They have a complex set-up – they are not looking for new partners, but are slowly moving into pushing cultural leadership that supports innovative thinking within the Ministry, and they expect to see more interventions and events.

Overall, there is an opportunity to enable a new public sector culture.

What is at the core of the initiative?

- To change government culture.
- To react to the growing interest in the application of service design as a key driver of service innovation, social innovation and user-centred innovation.
- To help cut across disciplinary and departmental silos and engage more directly with user needs.
- To engage in co-design with the users/members of the public.
- To produce more workable solutions and communicate them better to decision makers increasing the chance of implementation.
- To run innovation labs designed to foster collaboration (interaction, dialogue, and development activities).
11. OpenLab – UCSC

**Key Facts**

**Location:** California, USA  
**Established:** 2011  
**Lead Organisation:** UCSC  
**Number of Employees:** 27  
**Budget (2014/15):** $751,288 (for 13 FTE)  
**Website:** [http://openlabresearch.com/](http://openlabresearch.com/)

**Main Funders:** public research funding sources  
**Type of Collaboration:** cross-departmental academia, but also general public and industry

**Description of Activity**

The OpenLab is an on-campus centre for students to promote collaborative research across multiple faculties and departments at UCSC. The OpenLab was co-founded by the Arts Department and the Astronomy and Astrophysics Department at UCSC.

The activities of OpenLab are built on two pillars:

1. **OpenLab** is a network which connects people of different communities bringing together artists and scientists.

2. **OpenLab** provides the virtual and physical environment which facilitates collaborative research projects.

Participation provides graduate and undergraduate students with the skills and capacity to conceptualise and execute their ideas. Four campus workspaces provide access to hardware and software for hands-on development and innovation in design, manufacturing, communications, and data visualisation.

The aims and objectives of the OpenLab are to:

- Promote innovation via cross-disciplinary action through shared idea generation to solve real-world problems.
- Respond to the demand by students to work in a multi-disciplinary manner.
- Offer access to facilities across faculties and to create a conducive environment for collaboration.
- Connect people and provide a match-making service across the faculties and university departments (including external organisations and businesses).
- Design, visualise ideas, develop prototypes, products and digital application installations.
The following research questions are at the heart of OpenLab:

1. How can we strengthen or create new methodologies that truly engage art and science thinking?
2. Is an interdisciplinary laboratory space for cross-disciplinary and collaborative research more engaging and productive for students and faculties than without these resources?

Main Rationale

The OpenLab facilitates collaboration between art and science. The goal of OpenLab is to connect people and provide access to research facilities and create a network for collaborative discourse fueled by ideas across academic, arts and science communities, and industry.

The underlying rationale is that innovative solutions require collaborative approaches such as ‘Open Innovation’ and deeper and more experimental engagement is needed to respond to current challenges.

One of its main objectives is to visualise scientific research through collaborating with creative industries disciplines, ‘translating’ abstract ideas into tangible outputs. This supports public engagement with a wider audience across disciplines, industry and the wider community.

The OpenLab Network project sparked a grass-roots movement toward a more open, collaborative and experimental environment for those interested in interdisciplinary learning and research.

Development and Implementation of Cross-Sector Approaches

The example of OpenLab shows that the interest in cross-sector approaches has increased among students and academic staff for a number of reasons.

Not only is there an increasing need for more creative innovative solutions to address some of our world’s problems effectively, but also a substantial change in the way in which society is communicating and interacting with each other, facilitated through the internet, digital technology, crowdfunding, open sourcing, etc.

In addition, there seems to be an increasing interest in more community-based, social entrepreneurship models and environmental responsibility amongst the young generation to find more suitable and effective responses to the issues of our world. In this context, there is belief amongst many that conventional business models are not sufficiently flexible or adaptable to respond effectively to current problems.

In developing the OpenLab, the university has created a range of different spaces for interaction that helps students to feel motivated, take initiative and ownership of their ideas often addressing real-world issues and a social perspective. In the experience of UCSC,
young people are increasingly interested in the environment, social justice, creative and social entrepreneurship and interested in learning the relevant skills.

Another strong pillar of the OpenLab is that art and design represent the interface between science and society. Since its beginning in 2011, the OpenLab has produced a vast range of projects and initiatives where art and design helped visualise a number of scientific discoveries (such as in astrophysics, biology, oceanography, engineering) thereby overcoming ‘language’ barriers.

OpenLab is now linked with an IDEA Hub that provides students with a physical space to collaborate in interdisciplinary teams to develop ideas, create projects and prototypes while at the same time acquiring entrepreneurial skills. This initiative is led by the Center for Innovation and Entrepreneurial Development (CIED) and supported by OpenLab.

**Institutional Framework and Governance**

**How it all started**

The idea for the OpenLab was triggered by students expressing an interest in turning their ideas into prototypes, however, their own faculty did not have suitable lab space and the university had no cross-disciplinary co-operation between faculties in place.

Two Professors (Jennifer Parker (Art) and Enrico Ramirez-Ruiz (Astrophysics)) piloted the OpenLab in 2011 as a ‘Summer Institute’ session. Following its success and with the support of the University Dean, the OpenLab Research Centre was founded.

The OpenLab is an integral part of the UCSC and its institutional framework. There are 27 OpenLab ‘Participants’ including the two founders who head up the initiative as Executive Directors. The Dean of the University has ultimate decision-making power in terms of funding. In addition, the OpenLab applies to a range of small scale funding/grant schemes, and generates funding through sponsorship and donations (including Arts and Science organisations, NASA, Arts Councils, etc.) on a project-by-project basis.

**Development and Facilities**

As highlighted earlier, OpenLab has developed organically, and has created two main strands of activities.

Over the years, the OpenLab has developed close links across faculties and departments and it now represents a network of university facilities available for multi-disciplinary project work including:

- Casting lab that is both a foundry and mold-making space.
- Super Computer Lab which is a workspace for high-performance computing.
- Metal fabrication shop providing machines and several welding stations.
- Digital imaging room for printing professional, digital images.
- Photo studio that is professionally equipped and provides an environment for documenting projects and photographing objects and/or people for web or print.
- Print lab including lithography, intaglio, silkscreen, and digital printmaking.
- Wood shop supporting all processes involving wood and acrylic.

At the outset, the OpenLab started fairly small but due to the enthusiasm and support it received amongst staff and students its range of projects, initiatives and events grew steadily.

Substantial success was also achieved through linking up with external initiatives, festivals and science museums.

Important drivers for the increasing interest in collaboration were:

- Academic funding councils support public engagement activity;
- Entrepreneurship and particularly social entrepreneurship have become attractive topics across a wider range of academic disciplines; and
- Global threats such as climate change motivate students, researchers, companies and the public to search for new ways of addressing these problems.

**Key Achievements**

Increasing student numbers and interest expressed by other departments and external organisations are considered to be important achievements. However, the main
achievements are more intangible in nature, such as gaining satisfaction from facilitating a successful ‘translation’ (i.e. visualisation) of scientific discoveries to wider audiences. Even for the scientists itself, the medium of art and design often improves their understanding of some of their own discoveries.

Whilst at the beginning OpenLab needed to search for external collaborative partners, it now is in a position whereby organisations approach OpenLab seeking their professionalism, ideas, connections and for collaboration.

An important achievement is that OpenLab has contributed substantially to the success of showcasing events. For example, the Maker Fair in Silicon Valley, an event where inventors, students and others present their ideas and projects started 12 years ago, when it attracted around 5,000 people. Now, this ‘open-to-all’, two-day event has grown and attracts 100,000 people to its fairground location.

Examples of Activities

- Astrophysics Visualization Lab: visualizations of physics models to help researchers and the general public develop a sense of what happens during certain interactions between stars and super massive black holes (SMBHs).
- Oceanic Scales – Oceanic Scales is a place to learn and to be inspired about phytoplankton, the first link in the oceanic food chain. This project explores biomimicry as a tool. It explores the tipping point between humanities desires and the oceans needs.
- The THRIVEfamilyLAB is a new initiative for the creation of iPhone/iPad APPS for parents in the NICU and at home including inter-disciplinary training for professionals, Infant Observation Courses and pregnancy accompaniment groups.
- The Innovation and DesignLab (IDL) is devoted to creating and publishing new knowledge in the health and wellness industries through a holistic approach to innovation and design research that generates products, tools, services, and solutions to improve health outcomes.
- Kepler Explorer - a new application for the iPad and iPhone, allowing armchair explorers of the cosmos fingertip access to nearly 2,000 distant planetary systems discovered by NASA’s Kepler Mission.

Some Operational Points

Project ideas are put forward by students and researchers, or project themes are promoted to seek cross-disciplinary participation. The OpenLab staff act as match-makers to bring teams together across disciplines and departments. Participation in an OpenLab project can be accredited towards a student’s degree.

Multi-disciplinary research follows its distinct research agenda and resources and time are needed to explore ideas in a deeper manner, i.e. ‘what is the human experience’, ‘what does it mean to society/the public’, ‘what makes this idea relevant’?
Making space and mentorship available empowers students to take initiative and showcase their ideas. The sense of ownership motivates students in their work.

It is important when multi-disciplinary student/research groups are put together that group dynamics are fully understood. The facilitators need to have a good awareness of this to address any tensions if and when they arise. The group needs to learn how to communicate effectively, to trust each other, share actions and make joint decisions. Team building exercises, drama workshops etc. are often important tools to bring the group together.

The facilitator’s role is also important to help point out opportunities, to connect the group to external stakeholders, and to ensure that allocated roles and responsibilities of group members are adhered to and acknowledged. The facilitator also ensures that an entrepreneurship skills set is developed (e.g. presentation, communication, pitching ideas, self-promotion).

Project results are showcased to the wider public where possible (Maker Fair) and open sourced (apart from any unique ideas that might need ‘protection’).

For increased flexibility and sustainability reasons, OpenLab favours relatively small scale funding sources (around $50,000/$60,000 grant funding).

Regarding private sector support or donations, investors are often keen to contribute towards projects to implement their own Corporate Social Responsibility agendas. Many are happy to contribute towards creating a better society and addressing global issues.

**Approach to Evaluation and Assessing Achievements**

Many of the projects provide the ideas for new initiatives, as such outcomes are recycled, developed and set into different contexts (attributing a particular outcome to one funding source was, therefore, considered problematic).

Funders are said to not be particularly demanding in terms of performance monitoring, and are usually content with assessments regarding:

- Learning outcomes achieved (student assessments).
- Satisfaction scores from students about their modules/courses at OpenLab.
- Number of general public attending events/viewing projects.
Main Success Factors

- Supportive environment i.e. Dean supported the idea of creating OpenLab, and scientists are motivated to be involved.

- Many research funders require public engagement activities, the OpenLab fits well with this requirement as it supports academic staff to develop their community engagement activities.

- The OpenLab enabled departments to collaborate for the first time, it had a positive, unifying effect which has led to more integrated work.

Future Plans

Linking OpenLab to further Hubs and initiatives outside the university campus will continue. In this context, closer linkages to entrepreneurship training, industry mentorships, and greater engagement with local employers are envisaged. This will enhance graduates’ employability prospects.

Learning Points

- Cross-sector and multi-disciplinary activity needs a dedicated and specific research agenda to make it happen.

- Facilitation of cross-sector working is very important (group dynamics, psychology of groups of people from different backgrounds, clear allocation of roles and responsibilities, etc.).

- Entrepreneurial skills and new thinking about communication, open-sourcing, crowdfunding, social enterprise etc. must be part of the initiative.

- Work with those who are enthusiastic about cross-sector working.